LINKSYS®

A Division of Cisco Systems, Inc.

2.4GHz 802.11g

Wireless-G

PCI Adapter with SRX 400 User Guide

WIRELESS

Model No. **WMP54GX4**

CISCO SYSTEMS

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WARNING: This product contains chemicals, including lead, known to the State of California to cause cancer, and birth defects or other reproductive harm. ***Wash hands after handling.***

How to Use This User Guide

This User Guide has been designed to make understanding networking with the Wireless-G PCI Adapter easier than ever. Look for the following items when reading this User Guide:

This checkmark means there is a note of interest and is something you should pay special attention to while using the Wireless-G PCI Adapter.

This exclamation point means there is a caution or warning and is something that could damage your property or the Wireless-G PCI Adapter.

This question mark provides you with a reminder about something you might need to do while using the Wireless-G PCI Adapter.

In addition to these symbols, there are definitions for technical terms that are presented like this:

word: *definition.*

Also, each figure (diagram, screenshot, or other image) is provided with a figure number and description, like this:

Figure 0-1: Sample Figure Description

Figure numbers and descriptions can also be found in the “List of Figures” section in the “Table of Contents”.

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Chapter 1: Introduction

Welcome

Thank you for choosing the Wireless-G PCI Adapter with SRX400. With this Adapter, your wireless networking experience will be faster and easier than ever.

How does the Adapter do this? Like all wireless products, the Adapter allows for greater range and mobility within your wireless network, whether it's using the Wireless-G (802.11g) or Wireless-B (802.11b) standard.

But what does all of this mean?

Networks are useful tools for sharing computer resources. You can access one printer from different computers and access data located on another computer's hard drive. Networks are even used for playing multiplayer video games. So, networks are not only useful in homes and offices, they can also be fun.

PCs equipped with wireless cards and adapters can communicate without cumbersome cables. By sharing the same wireless settings, within their transmission radius, they form a wireless network.

The included Setup Wizard walks you through configuring the Adapter to your wireless network settings, step by step. Use the instructions in this Guide to help you set up and connect the Adapter using the Setup Wizard. These instructions should be all you need to get the most out of the Adapter.

network: *a series of computers or devices connected for the purpose of data sharing, storage, and/or transmission between users.*

adapter: *a device that adds network functionality to your PC.*

802.11b: *an IEEE wireless networking standard that specifies a maximum data transfer rate of 11Mbps and an operating frequency of 2.4GHz.*

802.11g *an IEEE wireless networking standard that specifies a maximum data transfer rate of 54Mbps and an operating frequency of 2.4GHz.*

What's in This User Guide?

This user guide covers the steps for setting up and using the Wireless-G PCI Adapter with SRX400.

- Chapter 1: Introduction
  This chapter describes the Adapter's applications and this User Guide.
- Chapter 2: Planning Your Wireless Network
  This chapter discusses a few of the basics about wireless networking.
- Chapter 3: Getting to Know the Wireless-G PCI Adapter with SRX400
  This chapter describes the physical features of the Adapter.
- Chapter 4: Setting Up and Connecting the Wireless-G PCI Adapter with SRX400
  This chapter shows you how to set up and connect the Adapter.

- Chapter 5: Using the Wireless Network Monitor
  This chapter explains how to use the Adapter's Wireless Network Monitor.

- Appendix A: Troubleshooting
  This appendix describes some problems and solutions, as well as frequently asked questions, regarding installation and use of the Adapter.

- Appendix B: Using Windows XP Wireless Zero Configuration
  This chapter instructs you on how to use Window XP Wireless Zero Configuration.

- Appendix C: Wireless Security
  This appendix discusses security issues regarding wireless networking and measures you can take to help protect your wireless network.

- Appendix D: Windows Help
  This appendix describes how you can use Windows Help for instructions about networking, such as installing the TCP/IP protocol.

- Appendix E: Glossary
  This appendix gives a brief glossary of terms frequently used in networking.

- Appendix F: Specifications
  This appendix provides the Adapter's technical specifications.

- Appendix G: Warranty Information
  This appendix supplies the Adapter's warranty information.

- Appendix H: Regulatory Information
  This appendix supplies the Adapter's regulatory information.

- Appendix I: Contact Information
  This appendix provides contact information for a variety of Linksys resources, including Technical Support.

Chapter 2: Planning Your Wireless Network

Network Topology

A wireless network is a group of computers, each equipped with one wireless adapter. Computers in a wireless network must be configured to share the same radio channel. Several PCs equipped with wireless cards or adapters can communicate with one another to form an ad-hoc network.

Linksys wireless adapters also provide users access to a wired network when using an access point or wireless router. An integrated wireless and wired network is called an infrastructure network. Each wireless PC in an infrastructure network can talk to any computer in a wired network infrastructure via the access point or wireless router.

An infrastructure configuration extends the accessibility of a wireless PC to a wired network, and can double the effective wireless transmission range for two wireless adapter PCs. Since an access point is able to forward data within a network, the effective transmission range in an infrastructure network can be doubled.

Roaming

Infrastructure mode also supports roaming capabilities for mobile users. Roaming means that you can move your wireless PC within your network and the access points will pick up the wireless PC's signal, providing that they both share the same channel and SSID.

Before you consider enabling roaming, choose a feasible radio channel and optimum access point position. Proper access point positioning combined with a clear radio signal will greatly enhance performance.

***topology**: the physical layout of a network.*

***ad-hoc**: a group of wireless devices communicating directly with each other (peer-to-peer) without the use of an access point.*

***access point**: a device that allows wireless-equipped computers and other devices to communicate with a wired network. Also used to expand the range of a wireless network*

***infrastructure**: a wireless network that is bridged to a wired network via an access point.*

***roaming**: the ability to take a wireless device from one access point's range to another without losing the connection.*

***ssid**: your wireless network's name.*

Network Layout

Linksys wireless access points and wireless routers have been designed for use with 802.11b and 802.11g products. Products using the 802.11g and 802.11b standards can communicate with each other.

Access points and wireless routers are compatible with 802.11b and 802.11g adapters, such as the notebook adapters for your laptop computers, PCI adapters for your desktop PCs, and USB adapters for when you want to enjoy USB connectivity. Wireless products will also communicate with a wireless print server.

When you wish to connect your wired network with your wireless network, network ports on access points and wireless routers can be connected to any of Linksys's switches or routers.

With these, and many other, Linksys products, your networking options are limitless. Go to the Linksys website at www.linksys.com for more information about wireless products.

***switch**: a data switch that connects computing devices to host computers, allowing a large number of devices to share a limited number of ports*

***router**: a networking device that connects multiple networks together*

Chapter 3: Getting to Know the Wireless-G Notebook Adapter with SRX400

Overview

The Adapter has two parts, the antenna stand and PCI card. The cable connectors and LED are located on the PCI Card.

The Antenna Stand

The antenna stand is shown in Figure 3-1.

Figure 3-1: Adapter's Antenna Stand

PCI Card

The Cable Connectors and LED are located on the PCI Card's bracket, as shown in Figure 3-2.

The Cable Connectors

The Adapter's connectors attach the antenna stand's cables to the PCI card part of the Adapter.

ANT The ANT connectors are connection points for the stand's antenna cables.

The LED

The PCI Card's LED displays information about network activity.

ACT Green. The **ACT** LED lights solid when power is on. The **ACT** LED flashes when there is network activity.

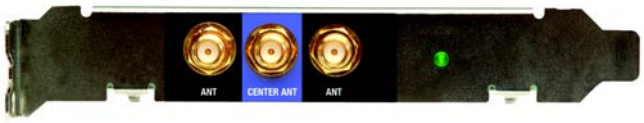

Figure 3-2: Adapter's Connectors and LED

Chapter 4: Setting Up and Connecting the Wireless-G PCI Adapter with SRX400

The Wireless-G PCI Adapter is set up with the Setup Wizard that comes on the CD enclosed with the Adapter. This chapter will guide you through the setup procedure.

IMPORTANT: Do not connect the Adapter until you are instructed to do so or the setup will not work.

Starting the Setup Wizard

To begin the setup process, insert the **Setup Wizard CD-ROM** into your CD-ROM drive. The Setup Wizard should run automatically, and the *Welcome* screen should appear. If it does not, click the **Start** button and choose **Run**. In the field that appears, enter **D:\setup.exe** (if "D" is the letter of your CD-ROM drive).

LINKSYS
A Division of Cisco Systems, Inc.
Welcome
Welcome to the Setup Wizard for your wireless adapter.
Please install the Adapter's software before connecting the Adapter to your PC.
Click Here to Start
2.4GHz 802.11g Wireless-G
PCI Adapter with SRX400
Setup Wizard ver. 1.1
User Guide
Exit
Cisco Systems
Model No. WMP54GX4
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Figure 4-1: Setup Wizard's Welcome Screen

On the *Welcome* screen, you have the following choices:

Click Here to Start - Click the **Click Here to Start** button to begin the software installation process.

User Guide - Click the **User Guide** button to open this User Guide.

Exit - Click **Exit** to exit the Setup Wizard.

1. To install the Adapter, click the **Click Here to Start** button on the *Welcome* screen.

2. After reading the License Agreement, click **Next** if you agree and want to continue the installation, or click **Cancel** to end the installation.

LINKSYS
License Agreement
1
Please read the following license agreement carefully.
Press the PAGE DOWN key or use the Scroll Bar to see the rest of the agreement.
END-USER LICENSE AGREEMENT
FOR Linksys Wireless Adapter
IMPORTANT-READ CAREFULLY: This Linksys End-User License Agreement ("EULA") is a legal agreement between you (either an individual or a single entity) and Linksys Corporation for the Linksys software product identified above, which includes computer
software and may include associated media, printed materials, additional computer software applications, and "online" or electronic documentation ("SOFTWARE PRODUCT"). By downloading, installing, copying, or otherwise using the SOFTWARE PRODUCT, you agree to be bound by the terms of this EULA> If you do not agree to the
If you accept the terms of this Agreement, click Next to continue. If not, choose Cancel and the Setup Wizard will close. You must click Next to continue the installation process.
Cancel
Next
Wireless-G PCI Adapter
Setup Wizard v1.1
Model No. WMP54GX4

Figure 4-2: Setup Wizard's License Agreement

3. Windows will begin copying the files onto your PC.

4. The Setup Wizard will now prompt you to install the Adapter into your PC. Click **Next** and power off your PC. After installing the Adapter, as shown below, and restarting your PC, the Setup Wizard will continue.

Installing the Adapter

1. If you haven't already done so, power off your desktop PC before installing the Adapter.

2. Open your PC case and locate an available PCI slot on the motherboard. Check with your computer manufacturer for instructions.

3. Slide the Adapter into the PCI slot. Make sure that all of its pins are touching the slot's contacts. You may have to apply a bit of pressure to slide the Adapter all the way in. After the Adapter is firmly in place, secure its fastening tab to your PC's chassis according to your PC's documentation. Then, close your PC.

4. Now you will connect the antenna stand's cables to the PCI card part of the Adapter. Attach the remaining cables to the Adapter's ANT. ports.

5. Attach the antennas to the connectors on the antenna stand.

6. Power on your desktop PC.

LINKSYS
Power off the PC and connect the Adapter
The next screen will ask you to turn off your PC. After it is powered off, insert the adapter in an available PCI slot. After you restart your PC, this Setup Wizard will continue.
Next
Wireless-G PCI Adapter
Setup Wizard v1.1
WMP54GX4

Figure 4-3: Connecting the Adapter Screen

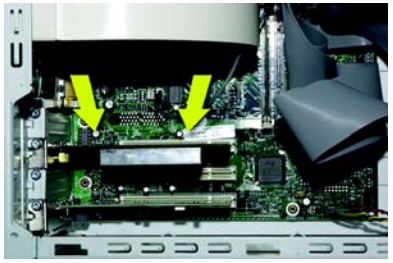


Figure 4-4: Installing the Adapter

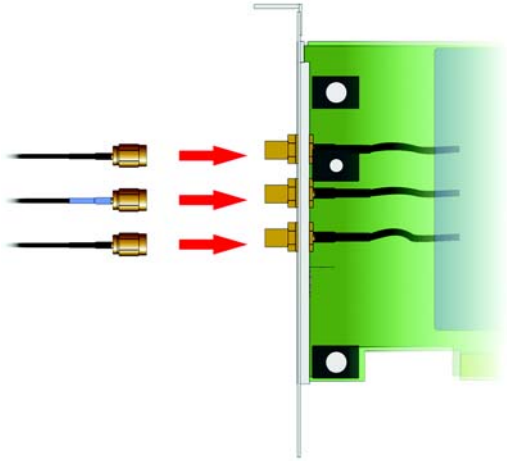


Figure 4-5: Attaching the Antenna Cables

Setting Up the Adapter

When the Setup Wizard resumes, the next screen to appear will be the *Available Wireless Network* screen.

This screen provides two options for setting up the Adapter.

- **Available Wireless Network.** Most users should use this option. The networks available to this Adapter will be listed on this screen. You can choose one of these networks and click the **Connect** button to connect to it. Click the **Refresh** button to update the Available Wireless Network list.
- **Manual Setup.** To set up the Adapter manually, select **Manual Setup**.

The setup for each option is described, step by step, under the appropriate heading on the following pages.

Click **Exit** to close the Setup Wizard, if you wish to set up the Adapter later.

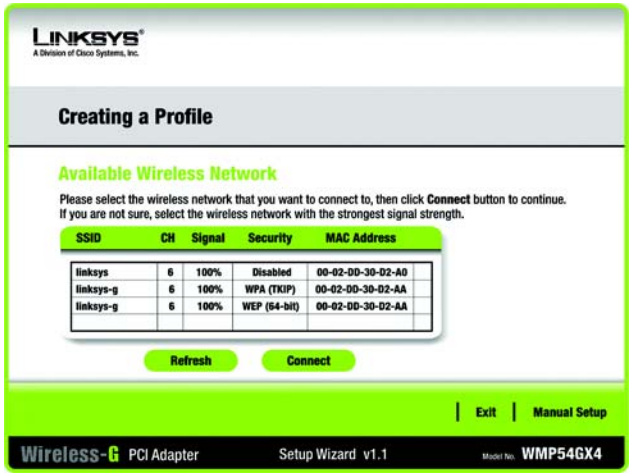

LINKSYS
A Division of Cisco Systems, Inc.
Creating a Profile
Available Wireless Network
Please select the wireless network that you want to connect to, then click Connect button to continue.
If you are not sure, select the wireless network with the strongest signal strength.
SSID CH Signal Security MAC Address
linksys 6 100% Disabled 00-02-DD-30-D2-A0
linksys-g 6 100% WPA (TKIP) 00-02-DD-30-D2-AA
linksys-g 6 100% WEP (64-bit) 00-02-DD-30-D2-AA
Refresh
Connect
Exit
Manual Setup
Wireless-G PCI Adapter
Setup Wizard v1.1
Model No. WMP54GX4

Figure 4-6: Available Wireless Network Screen

Setting Up the Adapter with an Available Network

The available networks are listed in the table on the center of the screen by SSID. Select the wireless network you wish to connect to and click the **Connect** button. (If you do not see your network listed, you can click the **Refresh** button to bring the list up again.) If the network utilizes wireless security, you will need to configure security on the Adapter. If not, you will be taken directly to the *Congratulations* screen.

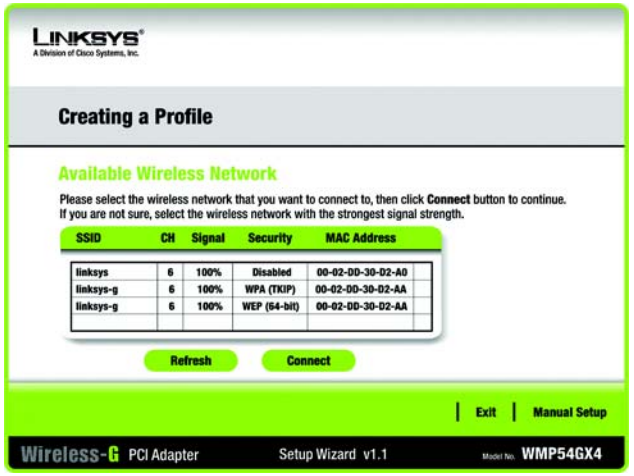

LINKSYS
A Division of Cisco Systems, Inc.
Creating a Profile
Available Wireless Network
Please select the wireless network that you want to connect to, then click Connect button to continue.
If you are not sure, select the wireless network with the strongest signal strength.
SSID CH Signal Security MAC Address
linksys 6 100% Disabled 00-02-DD-30-D2-A0
linksys-g 6 100% WPA (TKIP) 00-02-DD-30-D2-AA
linksys-g 6 100% WEP (64-bit) 00-02-DD-30-D2-AA
Refresh
Connect
Exit
Manual Setup
Wireless-G PCI Adapter
Setup Wizard v1.1
Model No. WMP54GX4

Figure 4-7: Available Wireless Network Screen

1. If wireless security has been enabled on this network, you will see a wireless security screen. If your network uses WEP (Wired Equivalent Privacy) encryption, the *WEP Key Needed for Connection* screen will appear. If your network uses WPA Personal or WPA2 Personal security, a screen will appear for one of those encryption methods.

   WEP Key Needed for Connection

   Select the level of encryption you want to use, **64-bit** or **128-bit**.

   Then, enter a passphrase or WEP key.

   Passphrase - Enter a passphrase in the *Passphrase* field, so a WEP key is automatically generated. The passphrase is case-sensitive and should not be longer than 31 alphanumeric characters. It must match the passphrase of your other wireless network devices and is compatible with Linksys wireless products only. (If you have any non-Linksys wireless products, enter the WEP key manually on those products.)

   WEP Key 1 - The WEP key you enter must match the WEP key of your wireless network. For 64-bit encryption, enter exactly 10 hexadecimal characters. For 128-bit encryption, enter exactly 26 hexadecimal characters. Valid hexadecimal characters are "0" to "9" and "A" to "F".

   Then, click **Connect** and proceed to the *Congratulations* screen. To cancel the connection, click **Cancel**.

encryption: *encoding data transmitted in a network.*

wep *(wired equivalent privacy): a method of encrypting network data transmitted on a wireless network for greater security.*

wpa *(wi-fi protected access): a wireless security protocol using TKIP (Temporal Key Integrity Protocol) encryption, which can be used in conjunction with a RADIUS server.*

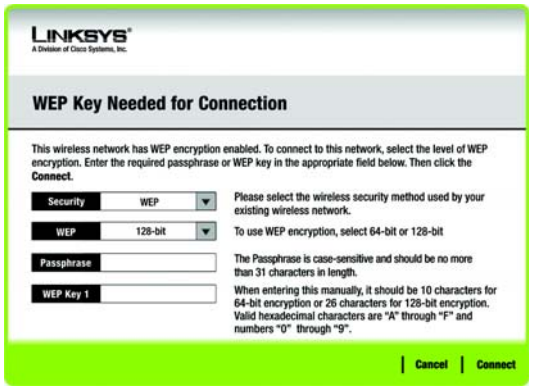

LINKSYS
A Division of Cisco Systems, Inc.
WEP Key Needed for Connection
This wireless network has WEP encryption enabled. To connect to this network, select the level of WEP encryption. Enter the required passphrase or WEP key in the appropriate field below. Then click the Connect.
Security WEP
Please select the wireless security method used by your existing wireless network.
WEP 128-bit
To use WEP encryption, select 64-bit or 128-bit
Passphrase
The Passphrase is case-sensitive and should be no more than 31 characters in length.
WEP Key 1
When entering this manually, it should be 10 characters for 64-bit encryption or 26 characters for 128-bit encryption. Valid hexadecimal characters are "A" through "F" and numbers "0" through "9".
Cancel
Connect

Figure 4-8: WEP Key Needed for Connection

WPA-Personal for Connection

WPA Personal offers two encryption methods, TKIP and AES, with dynamic encryption keys. Select one of these methods. Then enter a passphrase.

Encryption - Select the type of algorithm you want to use, **TKIP** or **AES**, from the *Encryption* drop-down menu.

Passphrase - Enter a Passphrase, also called a pre-shared key, of 8-63 characters in the *Passphrase* field. The longer and more complex your Passphrase is, the more secure your network will be.

Then, click **Connect** and proceed to the *Congratulations* screen. To cancel the connection, click **Cancel**.

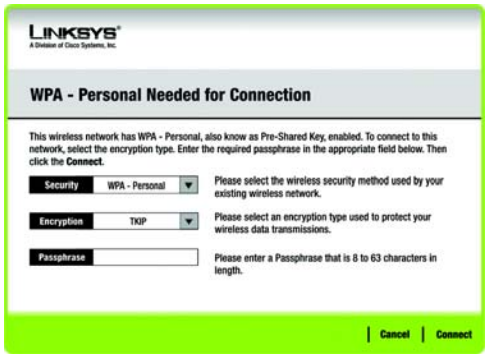

LINKSYS
WPA - Personal Needed for Connection
This wireless network has WPA - Personal, also know as Pre-Shared Key, enabled. To connect to this network, select the encryption type. Enter the required passphrase in the appropriate field below. Then click the Connect.
Security
WPA - Personal
Please select the wireless security method used by your existing wireless network.
Encryption
TKIP
Please select an encryption type used to protect your wireless data transmissions.
Passphrase
Please enter a Passphrase that is 8 to 63 characters in length.
Cancel
Connect

Figure 4-9: WPA-Personal Needed for Connection

WPA2 - Personal Needed for Connection

AES is automatically used as the encryption method. Enter a passphrase on this screen.

Passphrase - Enter a Passphrase, also called a pre-shared key, of 8-63 characters in the *Passphrase* field. The longer and more complex your Passphrase is, the more secure your network will be.

Then, click **Connect** and proceed to the *Congratulations* screen. To cancel the connection, click **Cancel**.

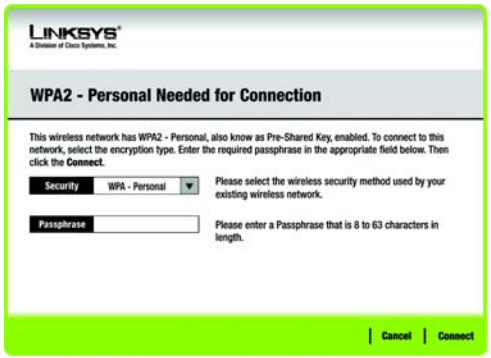

LINKSYS
WPA2 - Personal Needed for Connection
This wireless network has WPA2 - Personal, also know as Pre-Shared Key, enabled. To connect to this network, select the encryption type. Enter the required passphrase in the appropriate field below. Then click the Connect.
Security
WPA - Personal
Please select the wireless security method used by your existing wireless network.
Passphrase
Please enter a Passphrase that is 8 to 63 characters in length.
Cancel
Connect

Figure 4-10: WPA2-Personal Needed for Connection

2. After the Adapter has been configured for the network, the *Congratulations* screen will appear. Click **Connect to Network** to connect to your network.

Figure 4-11: Congratulations Screen

Congratulations! Setup is complete.

To check the link information, search for available wireless networks, or make additional configuration changes, refer to "Chapter 5: Using the Wireless Network Monitor."

Setting Up the Adapter with Manual Setup

Click **Manual Setup** on the *Available Wireless Network* screen to set up the Adapter manually.

1. After clicking Manual Setup, the *Network Settings* screen will appear. If your network has a router or other DHCP server, click the radio button next to **Obtain network settings automatically (DHCP)**.

   If your network does not have a DHCP server, click the radio button next to **Specify network settings**. Enter an IP Address, Subnet Mask, Default Gateway, and DNS addresses appropriate for your network. You must specify the IP Address and Subnet Mask on this screen. If you are unsure about the Default Gateway and DNS addresses, leave these fields empty.

   IP Address - This IP Address must be unique to your network.

   Subnet Mask - The Adapter's Subnet Mask must be the same as your wired network's Subnet Mask.

   Default Gateway - Enter the IP address of your network's Gateway here.

   DNS 1 and **DNS 2** - Enter the DNS address of your wired Ethernet network here.

   Click **Next** to continue, or click **Back** to return to the *Available Wireless Network* screen.

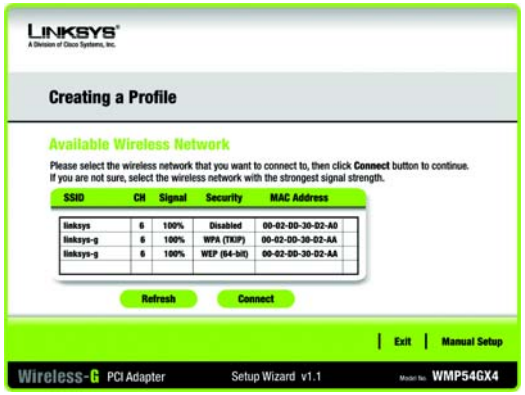


Figure 4-12: Available Wireless Network Screen

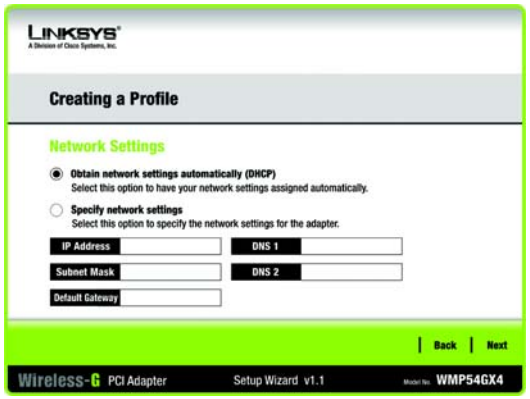


Figure 4-13: Network Settings Screen

ip address: *the address used to identify a computer or device on a network.*

subnet mask: *an address code that determines the size of a network.*

default gateway: *a device that forwards Internet traffic from your local area network.*

dns *(domain name server): the IP address of your ISP's server, which translates the names of websites into IP addresses.*

2. The *Wireless Mode* screen shows a choice of two wireless modes. Click the **Infrastructure Mode** radio button if you want to connect to a wireless router or access point. Click the **Ad-Hoc Mode** radio button if you want to connect to another wireless device directly without using a wireless router or access point. Then, enter the SSID for your network.

   Infrastructure Mode - Use this mode if you want to connect to a wireless router or access point.

   Ad-Hoc Mode - Use this mode if you want to connect to another wireless device directly without using a wireless router or access point.

   SSID - This is the wireless network name that must be used for all the devices in your wireless network. It is case- sensitive and should be a unique name to help prevent others from entering your network.

   Click **Next** to continue or **Back** to return to the previous screen.

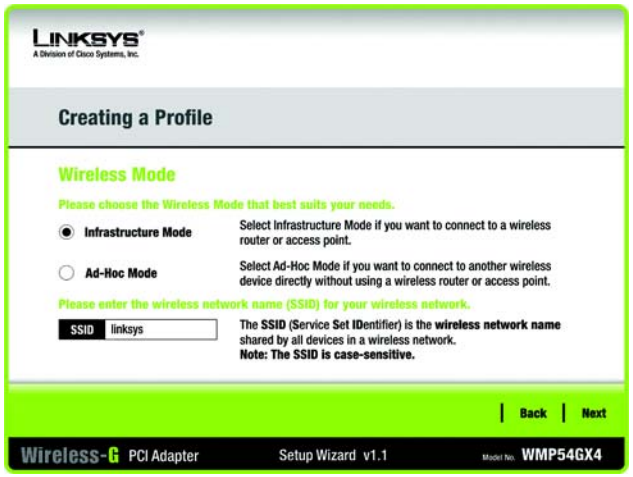

LINKSYS
A Division of Cisco Systems, Inc.
Creating a Profile
Wireless Mode
Please choose the Wireless Mode that best suits your needs.
Infrastructure Mode
Select Infrastructure Mode if you want to connect to a wireless router or access point.
Ad-Hoc Mode
Select Ad-Hoc Mode if you want to connect to another wireless device directly without using a wireless router or access point.
Please enter the wireless network name (SSID) for your wireless network.
SSID
linksys
The SSID (Service Set IDentifier) is the wireless network name shared by all devices in a wireless network.
Note: The SSID is case-sensitive.
Back
Next
Wireless-G PCI Adapter
Setup Wizard v1.1
Model No. WMP54GX4

Figure 4-14: Wireless Mode Screen

3. If you chose **Infrastructure Mode**, go to Step 4 now. If you chose **Ad-Hoc Mode**, the *Ad-Hoc Mode Settings* screen will appear. Select your channel and network mode settings on this screen.

   Channel - Select the correct channel for your wireless network. The channel you choose should match the channel set on the other devices in your wireless network. If you are unsure about which channel to use, keep the default setting.

   Network Mode - Select the mode in which your wireless network will operate. Select **Mixed Mode** if you want both Wireless-B and Wireless-G devices operating on the network, though at a slower speed. Select **G-Only Mode** if you do not want any Wireless-B devices operating on the network.

   Click **Next** to continue or click **Back** to change any settings.

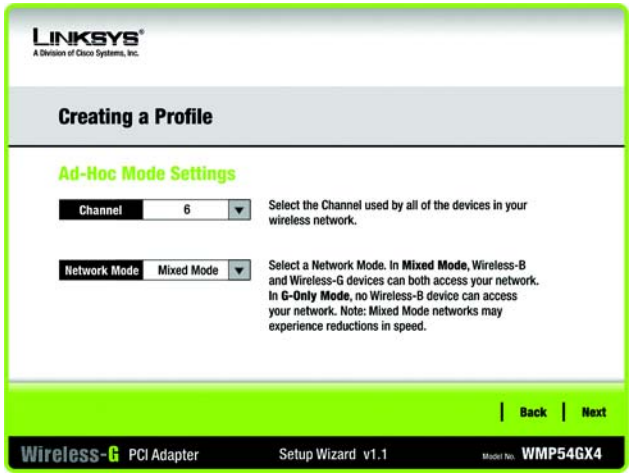

LINKSYS
A Division of Cisco Systems, Inc.
Creating a Profile
Ad-Hoc Mode Settings
Channel
6
Select the Channel used by all of the devices in your wireless network.
Network Mode
Mixed Mode
Select a Network Mode. In Mixed Mode, Wireless-B and Wireless-G devices can both access your network. In G-Only Mode, no Wireless-B device can access your network. Note: Mixed Mode networks may experience reductions in speed.
Back
Next
Wireless-G PCI Adapter
Setup Wizard v1.1
Model No. WMP54GX4

Figure 4-15: Ad-Hoc Mode Settings Screen

4. The *Wireless Security* screen will appear.

   If your wireless network doesn't use wireless security, select **Disabled** and then click the **Next** button to continue. Proceed to Step 5.

   From the *Security* drop-down menu, select the security method you want to use: **WEP**, **WPA Personal**, **WPA2 Personal**, **WPA Enterprise**, or **RADIUS**. WEP stands for Wired Equivalent Privacy, and WPA uses a security standard stronger than WEP encryption. RADIUS stands for Remote Authentication Dial-In User Service. Then proceed to the appropriate instructions for your security method.

LINKSYS
A Division of Cisco Systems, Inc.
Creating a Profile
Wireless Security
Security
Disabled
Please select the wireless security method used by your existing wireless network.
WEP stands for Wired Equivalent Privacy.
WPA-Personal, also known as Pre-Shared Key, is a security standard stronger than WEP encryption.
WPA2-Personal is the newer version with stronger encryption than WPA-Personal.
WPA-Enterprise and RADIUS use Remote Authentication Dial-In User Service (RADIUS).
Back
Next
Wireless-G PCI Adapter
Setup Wizard v1.1
Model No. WMP54GX4

Figure 4-16: Wireless Security Screen

WEP

Select a level of WEP encryption to use, and then enter a passphrase or WEP key.

WEP - To use WEP encryption, select **64-bit** or **128-bit** characters from the drop-down menu.

Passphrase - Instead of manually entering a WEP key, you can enter a passphrase in the *Passphrase* field, so a WEP key is automatically generated. This case-sensitive passphrase must match the passphrase of your other wireless network devices and is compatible with Linksys wireless products only. (If you have any non-Linksys wireless products, enter the WEP key manually on those products.)

WEP Key- The WEP key you enter must match the WEP key of your wireless network. If you are using 64-bit WEP encryption, then the key must consist of exactly 10 hexadecimal characters. If you are using 128-bit WEP encryption, then the key must consist of exactly 26 hexadecimal characters. Valid hexadecimal characters are "0" to "9" and "A" to "F".

Advanced Users:
TX Key - The default transmit key number is **1**. If your network's access point or wireless router uses transmit key number 2, 3, or 4, select the appropriate number from the *TX Key* drop-down box.

Authentication - The default is set to **Auto**, where it auto-detects for **Shared Key** or **Open** system. Shared Key is when both the sender and the recipient share a WEP key for authentication. Open key is when the sender and the recipient do not share a WEP key for authentication. All devices on your network must use the same authentication type.

Click the **Next** button to continue to the *Confirm New Settings* screen or the **Back** button to return to the previous screen.

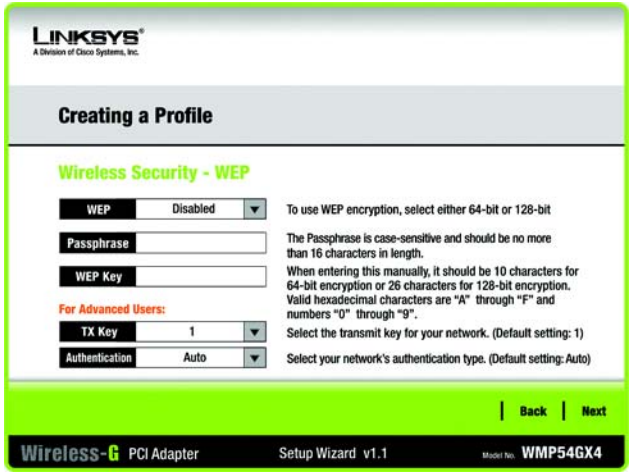

LINKSYS
A Division of Cisco Systems, Inc.
Creating a Profile
Wireless Security - WEP
WEP
Disabled
To use WEP encryption, select either 64-bit or 128-bit
Passphrase
The Passphrase is case-sensitive and should be no more than 16 characters in length.
WEP Key
When entering this manually, it should be 10 characters for 64-bit encryption or 26 characters for 128-bit encryption. Valid hexadecimal characters are "A" through "F" and numbers "0" through "9".
For Advanced Users:
TX Key
1
Select the transmit key for your network. (Default setting: 1)
Authentication
Auto
Select your network's authentication type. (Default setting: Auto)
Back
Next
Wireless-G PCI Adapter
Setup Wizard v1.1
Model No. WMP54GX4

Figure 4-17: Wireless Security - WEP Screen

WPA Personal

Select an encryption method, **TKIP** or **AES**, and then enter a passphrase.

Encryption - Select the type of algorithm, **TKIP** or **AES**, from the *Encryption* drop-down menu.

Passphrase - Enter a Passphrase of 8-63 characters in the *Passphrase* field.

Click the **Next** button to continue to the *Confirm New Settings* screen or the **Back** button to return to the previous screen.

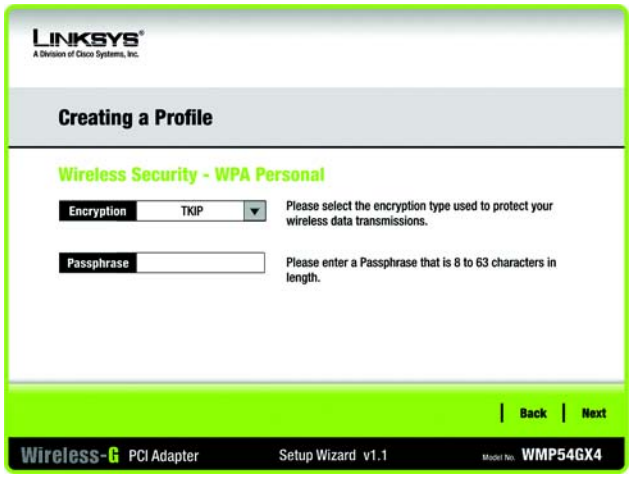


Figure 4-18: Wireless Security - WPA Personal Screen

WPA2 Personal

WPA2 Personal automatically uses AES, which is a stronger encryption method than TKIP. Enter a passphrase on this screen.

Passphrase - Enter a Passphrase of 8-63 characters in the *Passphrase* field.

Click the **Next** button to continue to the *Confirm New Settings* screen or the **Back** button to return to the previous screen.

Figure 4-19: Wireless Security - WPA2 Personal Screen

WPA Enterprise

WPA Enterprise is used in coordination with a RADIUS server. (This should only be used when a RADIUS server is connected to the Router.) WPA Enterprise offers two encryption methods, TKIP and AES, with dynamic encryption keys. It offers two authentication methods, EAP-TLS and PEAP. Select one of these methods and follow the appropriate instructions below.

EAP-TLS

Login Name - Enter the login name of your wireless network.

Server Name - Enter the name of the authentication server (this is optional).

Certificate - Select the certificate you have installed to authenticate you on your wireless network. If you want to use any certificate, keep the default setting, **Trust Any**.

Encryption - Select the type of algorithm you want to use, **TKIP** or **AES**.

PEAP

Login Name - Enter the login name of your wireless network.

Password - Enter the password of your wireless network.

Server Name - Enter the name of the authentication server (this is optional).

Certificate - Select the certificate you have installed to authenticate you on your wireless network. If you want to use any certificate, keep the default setting, **Trust Any**.

Inner Authen. - Select the authentication method used inside the PEAP tunnel.

Encryption - Select the type of algorithm you want to use, **TKIP** or **AES**.

Click the **Next** button to continue to the *Confirm New Settings* screen or the **Back** button to return to the previous screen.

Figure 4-20: Wireless Security - WPA Enterprise Using EAP-TLS Screen

Figure 4-21: Wireless Security - WPA Enterprise Using PEAP Screen

RADIUS

RADIUS uses the security of a RADIUS server. (This should only be used when a RADIUS server is connected to the Router.) It offers two authentication methods, EAP-TLS and PEAP. Select one of these methods and follow the appropriate instructions below.

EAP-TLS

Login Name - Enter the login name of your wireless network.

Server Name - Enter the name of the authentication server (this is optional).

Certificate - Select the certificate you have installed to authenticate you on your wireless network. If you want to use any certificate, keep the default setting, **Trust Any**.

PEAP

Login Name - Enter the login name of your wireless network.

Password - Enter the password of your wireless network.

Server Name - Enter the name of the authentication server (this is optional).

Certificate - Select the certificate you have installed to authenticate you on your wireless network.

Inner Authen. - Select the authentication method used inside the PEAP tunnel.

Encryption - Select the type of algorithm you want to use, **TKIP** or **AES**.

Click the **Next** button to continue to the *Confirm New Settings* screen or the **Back** button to return to the previous screen.

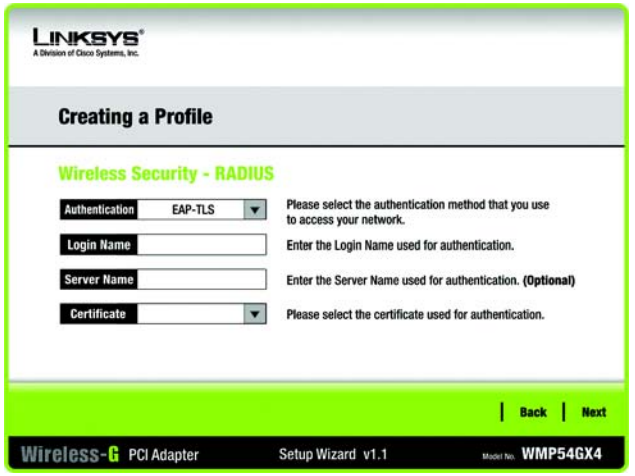


Figure 4-22: Wireless Security - RADIUS Screen

radius *(remote authentication dial-in user service): a protocol that uses an authentication server to control network access.*

Figure 4-23: Wireless Security - PEAP Screen

5. The next screen displays all of the Adapter's settings. If these are correct, click **Save** to save these settings to your hard drive. If these settings are not correct, click **Back** to change your settings.

Figure 4-24: Confirm New Settings Screen

6. After the software has been successfully installed, the *Congratulations* screen will appear. Click **Connect to Network** to connect to your network. Click **Return to Profiles screen** to open the Wireless Network Monitor's *Profiles* screen. For more information about the Wireless Network Monitor, refer to "Chapter 5: Using the Wireless Network Monitor."

Congratulations! Setup is complete.

To check the link information, search for available wireless networks, or make additional configuration changes, refer to "Chapter 5: Using the Wireless Network Monitor."

Figure 4-25: Congratulations Screen

Chapter 5: Using the Wireless Network Monitor

Use the Wireless Network Monitor to check the link information, search for available wireless networks, or create profiles that hold different configuration settings.

NOTE: The Wireless Network Monitor should only be accessed AFTER installing the Adapter. For more information on setting up and connecting the Adapter, refer to "Chapter 4: Setting Up and Connecting the Wireless-G PCI Adapter."

Accessing the Wireless Network Monitor

After setting up and connecting the Adapter, the Wireless Network Monitor icon will appear in your PC's system tray. If the Wireless Network Monitor is enabled, then the icon will be green. If the Wireless Network Monitor is disabled or the Adapter is not connected, then the icon will be gray.

Figure 5-1: Wireless Network Monitor Icon

Link Information Screens

The opening screen of the Wireless Network Monitor is the *Link Information* screen. From this screen, you can find out how strong the current wireless signal is and how good the connection's quality is. You can also click the **More Information** button to view additional status and statistics about the current wireless connection. To search for available wireless networks, click the **Site Survey** tab. To perform configuration changes or create connection profiles, click the **Profiles** tab.

Link Information

The *Link Information* screen displays network mode, signal strength, and link quality information about the current connection. It also provides a button to click for additional status information.

Ad-Hoc Mode or **Infrastructure Mode** - The screen indicates whether the Adapter is currently working in Ad-Hoc or Infrastructure mode.

Signal Strength - The Signal Strength bar indicates signal strength.

Link Quality - The Link Quality bar indicates the quality of the wireless network connection.

Click the **More Information** button to view additional information about the wireless network connection on the *Wireless Network Status* screen.

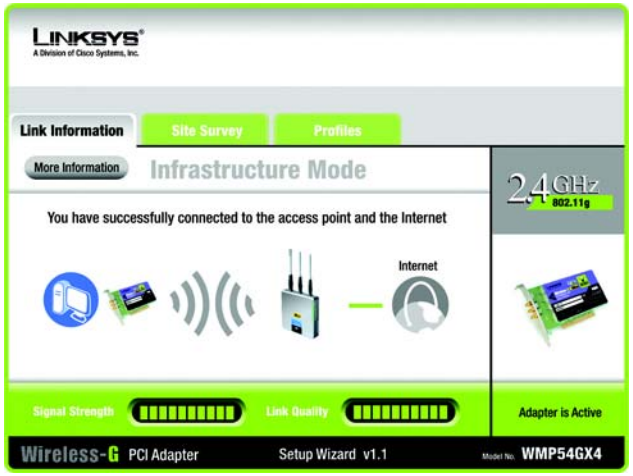


Figure 5-2: Link Information Screen

Wireless Network Status

The *Wireless Network Status* screen provides information on your current network settings.

Status - This shows the status of the wireless network connection.

SSID - This is the unique name of the wireless network.

Wireless Mode - The mode of the wireless network currently in use is displayed here.

Transfer Rate - The data transfer rate of the current connection is shown here.

Channel - This is the channel to which the wireless network devices are set.

Security - The status of the wireless security feature is displayed here.

Authentication - This is your wireless network's authentication method.

IP Address - The IP Address of the Adapter is displayed here.

Subnet Mask - The Subnet Mask of the Adapter is shown here.

Default Gateway - The Default Gateway address of the Adapter is displayed here.

DNS - This is the DNS address of the Adapter.

DHCP Client - This displays the Adapter's status as a DHCP client.

MAC Address- The MAC address of the wireless network's access point or wireless router is shown here.

Signal Strength - The Signal Strength bar indicates the signal strength.

Link Quality - The Link Quality bar indicates the quality of the wireless network connection.

Click the **Back** button to return to the initial *Link Information* screen. Click the **Statistics** button to go to the *Wireless Network Statistics* screen. Click the **Save to Profile** button to save the currently active connection settings to a profile.

Figure 5-3: More Information - Wireless Network Status Screen

Wireless Network Statistics

The *Wireless Networks Statistics* screen provides statistics on your current network settings.

Transmit Rate - This is the data transfer rate of the current connection. (In Auto mode, the Adapter dynamically shifts to the fastest data transfer rate possible at any given time.)

Receive Rate - This is the rate at which data is received.

Packets Received - This shows the number of packets received by the Adapter, in real time, since connecting to the wireless network or since the *Refresh Statistics* button was last pressed.

Packets Transmitted - This shows the number of packets transmitted from the Adapter, in real time, since connecting to the wireless network or since the *Refresh Statistics* button was last pressed.

Bytes Received - This shows the number of bytes received by the Adapter, in real time, since connecting to the wireless network or since the *Refresh Statistics* button was last pressed.

Bytes Transmitted - This shows the number of bytes transmitted from the Adapter, in real time, since connecting to the wireless network or since the *Refresh Statistics* button was last pressed.

Driver Version - This shows the version of the Adapter's driver.

Noise Level - This shows the level of background noise affecting the wireless signal. A lower reading translates into a higher quality signal.

Signal Strength - This is the intensity of the wireless signal received by the Adapter.

Up Time - This indicates the length of the most recent connection to a wireless network.

Total Up Time - This indicates the cumulative total of the Adapter's connection time.

Signal Strength - The Signal Strength bar indicates the signal strength.

Link Quality - The Link Quality bar indicates the quality of the wireless network connection.

Refresh - Click the **Refresh** button to reset the statistics.

Click the **Back** button to return to the initial *Link Information* screen. Click the **Status** button to go to the *Wireless Network Status* screen. Click the **Save to Profile** button to save the currently active connection settings to a profile.

Figure 5-4: More Information - Wireless Network Statistics Screen

Site Survey

The *Site Survey* screen displays a list of available networks in the table on the left. The table shows each network's SSID, Channel, and the quality of the wireless signal the Adapter is receiving. You may click **SSID**, **CH** (Channel), or **Signal**, to sort by that field.

SSID - The SSID or unique name of the wireless network is displayed here.

CH - This is the channel that the network uses.

Signal - This is the percentage of signal strength, from 0 to 100%.

Site Information

For each network selected, the following settings are listed:

SSID - This the SSID or unique name of the wireless network.

Wireless Mode - This is the mode of the wireless network currently in use.

Channel - This is the channel to which the wireless network devices are set.

Security - The status of the wireless security feature is displayed here.

MAC Address- The MAC address of the wireless network's access point is displayed here.

Refresh - Click the **Refresh** button to perform a new search for wireless devices.

Connect - To connect to one of the networks on the list, select the wireless network, and click the **Connect** button. If the network has wireless security enabled, a screen requiring security information will appear.

If the network has WEP encryption enabled, then you will see the *WEP Key Needed for Connection* screen. Select the appropriate level of WEP encryption, **64-bit** or **128-bit** Then enter the network's Passphrase or WEP Key. To connect to the network, click **Connect**. To cancel the connection, click **Cancel**.

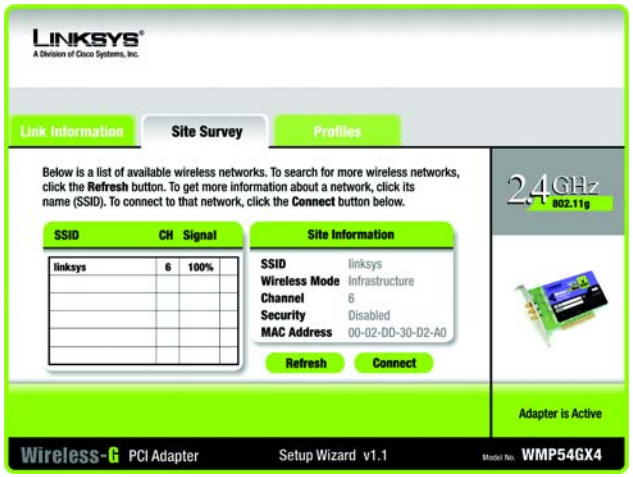


Figure 5-5: Site Survey Screen

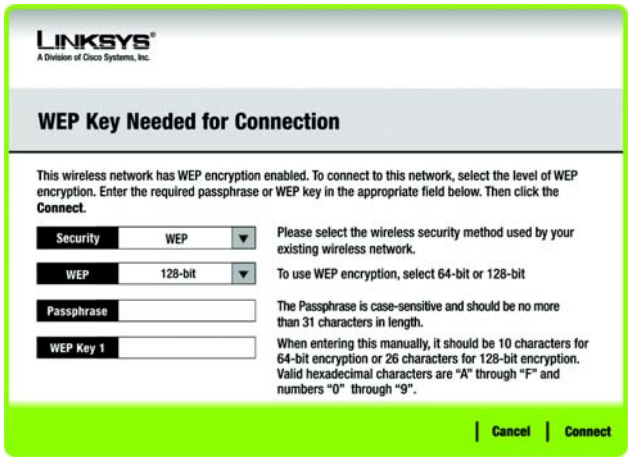

LINKSYS
A Division of Cisco Systems, Inc.
WEP Key Needed for Connection
This wireless network has WEP encryption enabled. To connect to this network, select the level of WEP encryption. Enter the required passphrase or WEP key in the appropriate field below. Then click the Connect.
Security
WEP
Please select the wireless security method used by your existing wireless network.
WEP
128-bit
To use WEP encryption, select 64-bit or 128-bit
Passphrase
The Passphrase is case-sensitive and should be no more than 31 characters in length.
WEP Key 1
When entering this manually, it should be 10 characters for 64-bit encryption or 26 characters for 128-bit encryption. Valid hexadecimal characters are "A" through "F" and numbers "0" through "9".
Cancel
Connect

Figure 5-6: WEP Key Needed for Connection

If the network has WPA Personal security enabled, then you will see the *WPA-Personal Needed for Connection* screen. Select the appropriate encryption type, **TKIP** or **AES**. Enter the network's Passphrase or pre-shared key in the *Passphrase* field. To connect to the network, click **Connect**. To cancel the connection, click **Cancel**.

If the network has WPA2 Personal security enabled, then you will see the *WPA2-Personal Needed for Connection* screen. Enter the network's Passphrase or pre-shared key in the *Passphrase* field. To connect to the network, click **Connect**. To cancel the connection, click **Cancel**.

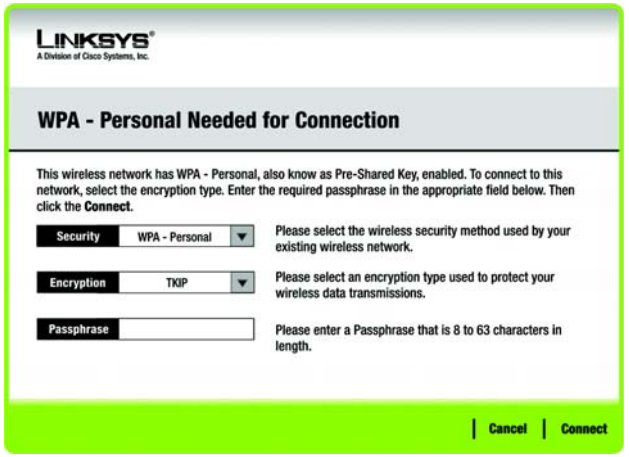

LINKSYS
A Division of Cisco Systems, Inc.
WPA - Personal Needed for Connection
This wireless network has WPA - Personal, also know as Pre-Shared Key, enabled. To connect to this network, select the encryption type. Enter the required passphrase in the appropriate field below. Then click the Connect.
Security
WPA - Personal
Please select the wireless security method used by your existing wireless network.
Encryption
TKIP
Please select an encryption type used to protect your wireless data transmissions.
Passphrase
Please enter a Passphrase that is 8 to 63 characters in length.
Cancel
Connect

Figure 5-7: WPA-Personal Needed for Connection

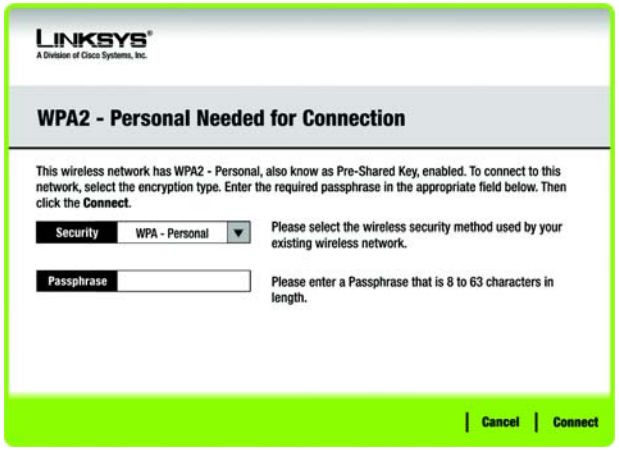

LINKSYS
A Division of Cisco Systems, Inc.
WPA2 - Personal Needed for Connection
This wireless network has WPA2 - Personal, also know as Pre-Shared Key, enabled. To connect to this network, select the encryption type. Enter the required passphrase in the appropriate field below. Then click the Connect.
Security
WPA - Personal
Please select the wireless security method used by your existing wireless network.
Passphrase
Please enter a Passphrase that is 8 to 63 characters in length.
Cancel
Connect

Figure 5-8: WPA2-Personal Needed for Connection

Profiles

The *Profiles* screen lets you save different configuration profiles for different network setups. The table on the left displays a list of available profiles with their profile names and SSIDs.

Profile - The name of the profile is displayed here.

SSID - The SSID or unique name of the wireless network is displayed here.

Site Information

For each profile selected, the following are listed:

Wireless Mode - This is the mode of the wireless network currently in use.

Channel - This is the channel to which the wireless network devices are set.

Security - The status of the wireless security feature is displayed here.

Authentication - The authentication setting for the network is shown here.

Connect - To connect to a wireless network using a specific profile, select the profile, and click the **Connect** button.

New - Click **New** to create a new profile. See the next section, "Creating a New Profile," for detailed instructions.

Edit - Select the profile you want to change, and then click **Edit**.

Import - Click **Import** to import a profile that has been saved in another location. Select the appropriate file, and click the **Open** button.

Export - Select the profile you want to save in a different location, and click **Export**. Direct Windows to the appropriate folder, and click the **Save** button.

NOTE: If you want to export more than one profile, you have to export them one at a time.

Delete - Select the profile you want to delete, and then click **Delete**.

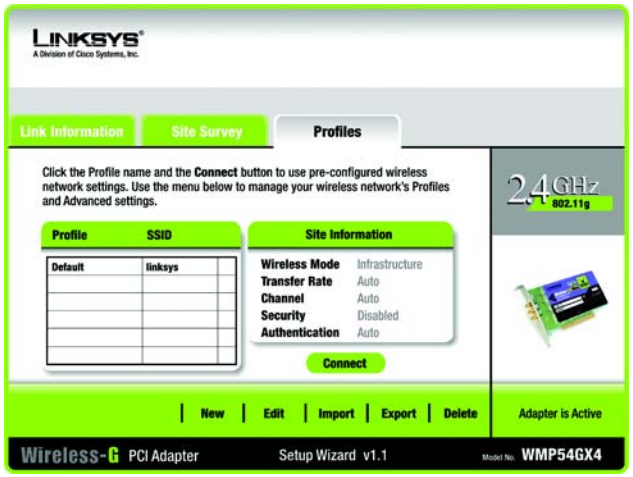


Figure 5-9: Profiles Screen

Figure 5-10: Import a Profile

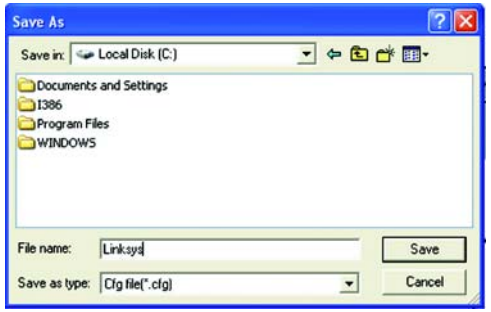


Figure 5-11: Export a Profile

Creating a New Profile

On the *Profiles* screen, click the **New** button to create a new profile. Enter a name for the new profile, and click the **OK** button. Click the **Cancel** button to return to the *Profiles* screen without entering a name.

The *Available Wireless Network* screen provides two options for setting up a profile.

- **Available Wireless Network.** Most users should use this option. The networks available to this Adapter will be listed on this screen. You can choose one of these networks and click the **Connect** button to connect to it. Click the **Refresh** button to update the Available Wireless Network list.
- **Manual Setup.** To set up the Adapter manually, select **Manual Setup**.

The setup for each option is described, step by step, under the appropriate heading on the following pages.

Click **Exit** to close the Setup Wizard, if you wish to set up the Adapter later.

Figure 5-12: Create a New Profile

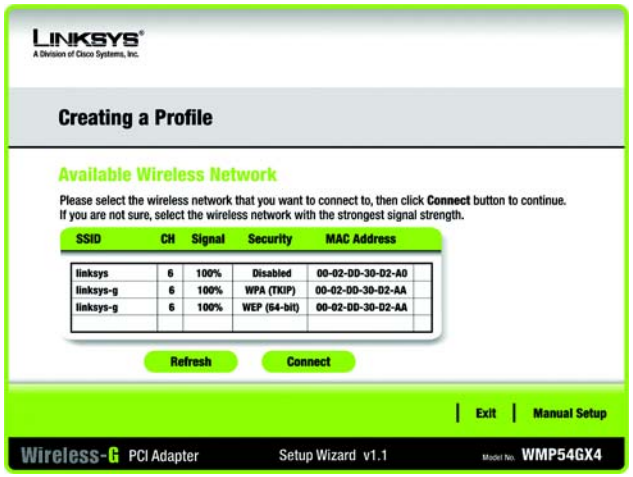

LINKSYS
A Division of Cisco Systems, Inc.
Creating a Profile
Available Wireless Network
Please select the wireless network that you want to connect to, then click Connect button to continue.
If you are not sure, select the wireless network with the strongest signal strength.
SSID CH Signal Security MAC Address
linksys 6 100% Disabled 00-02-DD-30-D2-A0
linksys-g 6 100% WPA (TKIP) 00-02-DD-30-D2-AA
linksys-g 6 100% WEP (64-bit) 00-02-DD-30-D2-AA
Refresh
Connect
Exit
Manual Setup
Wireless-G PCI Adapter
Setup Wizard v1.1
Model No. WMP54GX4

Figure 5-13: Available Wireless Network Screen

Setting Up the Adapter with an Available Network

The available networks are listed in the table on the center of the screen by SSID. Select the wireless network you wish to connect to and click the **Connect** button. (If you do not see your network listed, you can click the **Refresh** button to bring the list up again.) If the network utilizes wireless security, you will need to configure security on the Adapter. If not, you will be taken directly to the *Congratulations* screen.

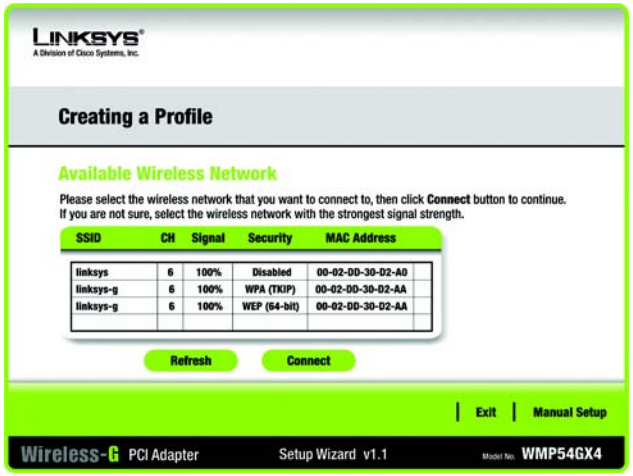


Figure 5-14: Available Wireless Network Screen

1. If wireless security has been enabled on this network, you will see a wireless security screen. If your network uses WEP (Wired Equivalent Privacy) encryption, the *WEP Key Needed for Connection* screen will appear. If your network uses WPA Personal or WPA2 Personal security, a screen will appear for one of those encryption methods.

   WEP Key Needed for Connection

   Select the level of encryption you want to use, **64-bit** or **128-bit**.

   Then, enter a passphrase or WEP key.

   Passphrase - Enter a passphrase in the *Passphrase* field, so a WEP key is automatically generated. The passphrase is case-sensitive and should not be longer than 31 alphanumeric characters. It must match the passphrase of your other wireless network devices and is compatible with Linksys wireless products only. (If you have any non-Linksys wireless products, enter the WEP key manually on those products.)

   WEP Key 1 - The WEP key you enter must match the WEP key of your wireless network. For 64-bit encryption, enter exactly 10 hexadecimal characters. For 128-bit encryption, enter exactly 26 hexadecimal characters. Valid hexadecimal characters are "0" to "9" and "A" to "F".

   Then, click **Connect** and proceed to the *Congratulations* screen. To cancel the connection, click **Cancel**.

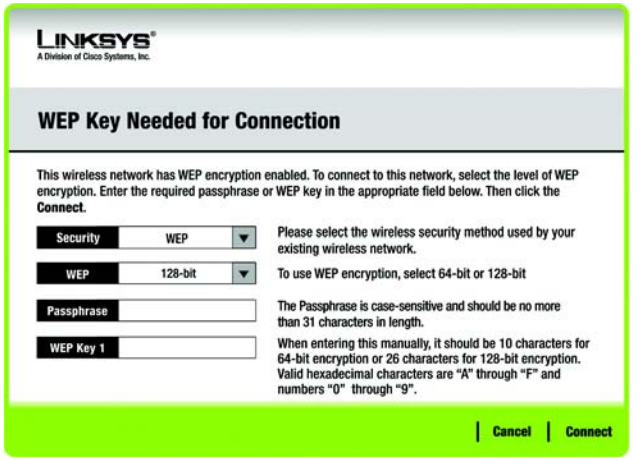

LINKSYS
A Division of Cisco Systems, Inc.
WEP Key Needed for Connection
This wireless network has WEP encryption enabled. To connect to this network, select the level of WEP encryption. Enter the required passphrase or WEP key in the appropriate field below. Then click the Connect.
Security
WEP
Please select the wireless security method used by your existing wireless network.
WEP
128-bit
To use WEP encryption, select 64-bit or 128-bit
Passphrase
The Passphrase is case-sensitive and should be no more than 31 characters in length.
WEP Key 1
When entering this manually, it should be 10 characters for 64-bit encryption or 26 characters for 128-bit encryption. Valid hexadecimal characters are "A" through "F" and numbers "0" through "9".
Cancel
Connect

Figure 5-15: WEP Key Needed for Connection

WPA-Personal for Connection

WPA Personal offers two encryption methods, TKIP and AES, with dynamic encryption keys. Select one of these methods. Then enter a passphrase.

Encryption - Select the type of algorithm you want to use, **TKIP** or **AES**, from the *Encryption* drop-down menu.

Passphrase - Enter a Passphrase, also called a pre-shared key, of 8-63 characters in the *Passphrase* field. The longer and more complex your Passphrase is, the more secure your network will be.

Then, click **Connect** and proceed to the *Congratulations* screen. To cancel the connection, click **Cancel**.

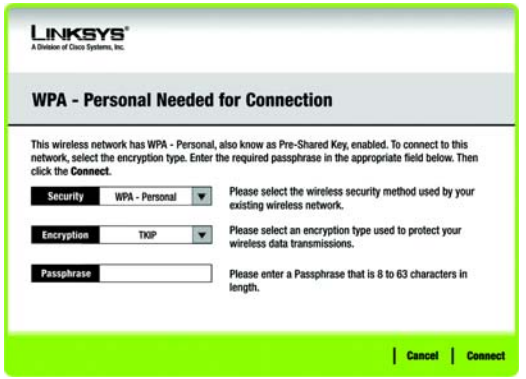

LINKSYS
A Division of Cisco Systems, Inc.
WPA - Personal Needed for Connection
This wireless network has WPA - Personal, also know as Pre-Shared Key, enabled. To connect to this network, select the encryption type. Enter the required passphrase in the appropriate field below. Then click the Connect.
Security
WPA - Personal
Please select the wireless security method used by your existing wireless network.
Encryption
TKIP
Please select an encryption type used to protect your wireless data transmissions.
Passphrase
Please enter a Passphrase that is 8 to 63 characters in length.
Cancel
Connect

Figure 5-16: WPA-Personal Needed for Connection

WPA2 - Personal Needed for Connection

AES is automatically used as the encryption method. Enter a passphrase on this screen.

Passphrase - Enter a Passphrase, also called a pre-shared key, of 8-63 characters in the *Passphrase* field. The longer and more complex your Passphrase is, the more secure your network will be.

Then, click **Connect** and proceed to the *Congratulations* screen. To cancel the connection, click **Cancel**.

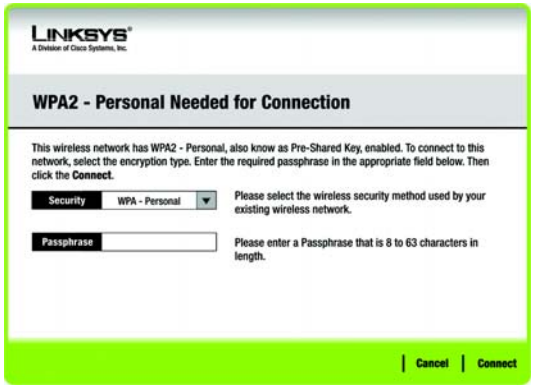

LINKSYS
A Division of Cisco Systems, Inc.
WPA2 - Personal Needed for Connection
This wireless network has WPA2 - Personal, also know as Pre-Shared Key, enabled. To connect to this network, select the encryption type. Enter the required passphrase in the appropriate field below. Then click the Connect.
Security
WPA - Personal
Please select the wireless security method used by your existing wireless network.
Passphrase
Please enter a Passphrase that is 8 to 63 characters in length.
Cancel
Connect

Figure 5-17: WPA2-Personal Needed for Connection

2. After the Adapter has been configured for the network, the *Congratulations* screen will appear. Click **Connect to Network** to connect to your network.

Congratulations! The profile is complete.

Figure 5-18: Congratulations Screen

Setting Up the Adapter with Manual Setup

Click **Manual Setup** on the *Available Wireless Network* screen to set up the Adapter manually.

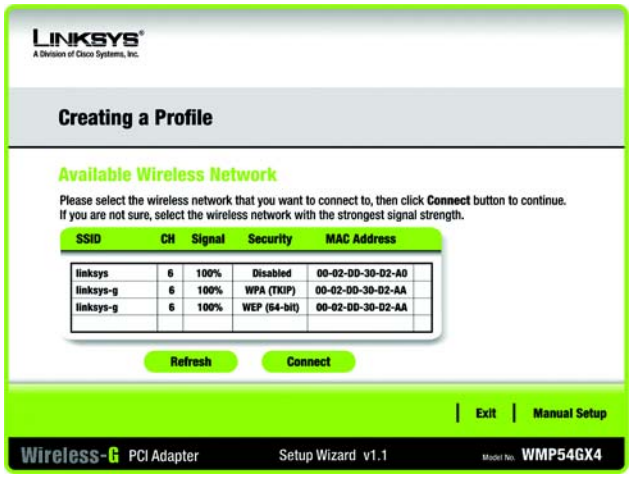

LINKSYS
A Division of Cisco Systems, Inc.
Creating a Profile
Available Wireless Network
Please select the wireless network that you want to connect to, then click Connect button to continue.
If you are not sure, select the wireless network with the strongest signal strength.
SSID CH Signal Security MAC Address
linksys 6 100% Disabled 00-02-DD-30-D2-A0
linksys-g 6 100% WPA (TKIP) 00-02-DD-30-D2-AA
linksys-g 6 100% WEP (64-bit) 00-02-DD-30-D2-AA
Refresh
Connect
Exit
Manual Setup
Wireless-G PCI Adapter
Setup Wizard v1.1
Model No. WMP54GX4

Figure 5-19: Available Wireless Network Screen

1. After clicking Manual Setup, the *Network Settings* screen will appear. If your network has a router or other DHCP server, click the radio button next to **Obtain network settings automatically (DHCP)**.

   If your network does not have a DHCP server, click the radio button next to **Specify network settings**. Enter an IP Address, Subnet Mask, Default Gateway, and DNS addresses appropriate for your network. You must specify the IP Address and Subnet Mask on this screen. If you are unsure about the Default Gateway and DNS addresses, leave these fields empty.

   IP Address - This IP Address must be unique to your network.

   Subnet Mask - The Adapter's Subnet Mask must be the same as your wired network's Subnet Mask.

   Default Gateway - Enter the IP address of your network's Gateway here.

   DNS 1 and **DNS 2** - Enter the DNS address of your wired Ethernet network here.

   Click **Next** to continue, or click **Back** to return to the *Available Wireless Network* screen.

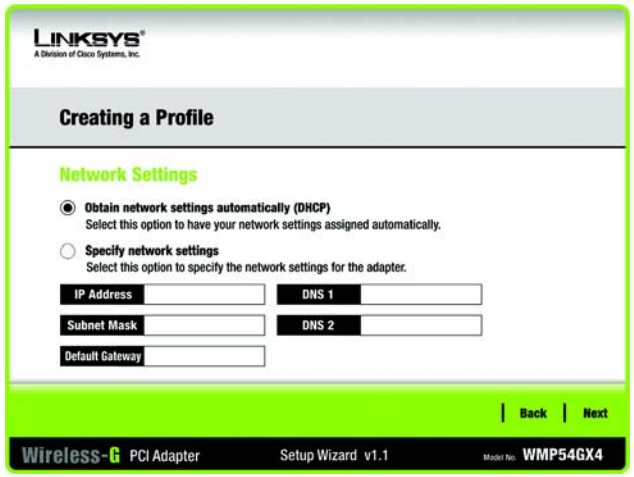


Figure 5-20: Network Settings Screen

2. The *Wireless Mode* screen shows a choice of two wireless modes. Click the **Infrastructure Mode** radio button if you want to connect to a wireless router or access point. Click the **Ad-Hoc Mode** radio button if you want to connect to another wireless device directly without using a wireless router or access point. Then, enter the SSID for your network.

   Infrastructure Mode - Use this mode if you want to connect to a wireless router or access point.

   Ad-Hoc Mode - Use this mode if you want to connect to another wireless device directly without using a wireless router or access point.

   SSID - This is the wireless network name that must be used for all the devices in your wireless network. It is case- sensitive and should be a unique name to help prevent others from entering your network.

   Click **Next** to continue or **Back** to return to the previous screen.

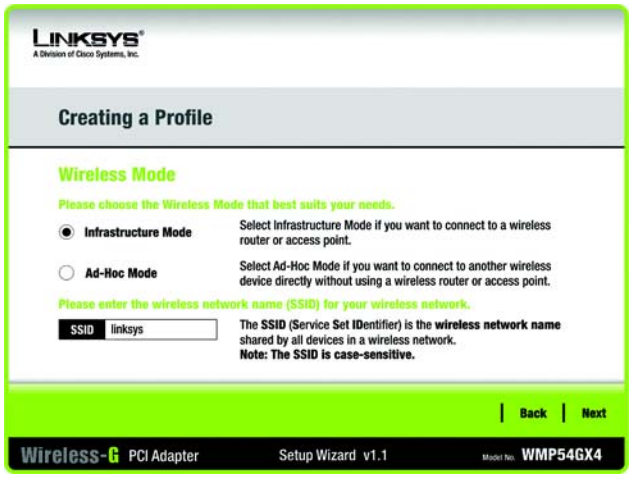

LINKSYS
A Division of Cisco Systems, Inc.
Creating a Profile
Wireless Mode
Please choose the Wireless Mode that best suits your needs.
Infrastructure Mode
Select Infrastructure Mode if you want to connect to a wireless router or access point.
Ad-Hoc Mode
Select Ad-Hoc Mode if you want to connect to another wireless device directly without using a wireless router or access point.
Please enter the wireless network name (SSID) for your wireless network.
SSID linksys
The SSID (Service Set IDentifier) is the wireless network name shared by all devices in a wireless network.
Note: The SSID is case-sensitive.
Back
Next
Wireless-G PCI Adapter
Setup Wizard v1.1
Model No. WMP54GX4

Figure 5-21: Wireless Mode Screen

3. If you chose **Infrastructure Mode**, go to Step 4 now. If you chose **Ad-Hoc Mode**, the *Ad-Hoc Mode Settings* screen will appear. Select your channel and network mode settings on this screen.

   Channel - Select the correct channel for your wireless network. The channel you choose should match the channel set on the other devices in your wireless network. If you are unsure about which channel to use, keep the default setting.

   Network Mode - Select **Mixed Mode** if you want Wireless-B and Wireless-G devices operating on the network.

   Click **Next** to continue or click **Back** to change any settings.

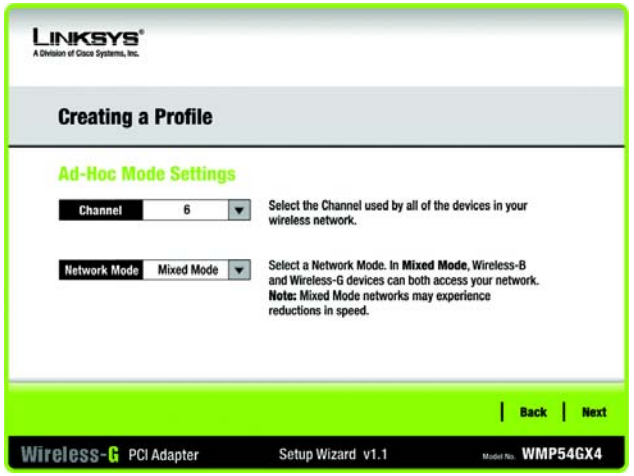

LINKSYS
A Division of Cisco Systems, Inc.
Creating a Profile
Ad-Hoc Mode Settings
Channel 6
Select the Channel used by all of the devices in your wireless network.
Network Mode Mixed Mode
Select a Network Mode. In Mixed Mode, Wireless-B and Wireless-G devices can both access your network.
Note: Mixed Mode networks may experience reductions in speed.
Back
Next
Wireless-G PCI Adapter
Setup Wizard v1.1
Model No. WMP54GX4

Figure 5-22: Ad-Hoc Mode Settings

4. The *Wireless Security* screen will appear.

   If your wireless network doesn't use wireless security, select **Disabled** and then click the **Next** button to continue. Proceed to Step 5.

   From the *Security* drop-down menu, select the security method you want to use: **WEP**, **WPA Personal**, **WPA2 Personal**, **WPA Enterprise**, or **RADIUS**. WEP stands for Wired Equivalent Privacy, and WPA uses a security standard stronger than WEP encryption. RADIUS stands for Remote Authentication Dial-In User Service. Then proceed to the appropriate instructions for your security method.

LINKSYS
A Division of Cisco Systems, Inc.
Creating a Profile
Wireless Security
Security
Disabled
Please select the wireless security method used by your existing wireless network.
WEP stands for Wired Equivalent Privacy.
WPA-Personal, also known as Pre-Shared Key, is a security standard stronger than WEP encryption.
WPA2-Personal is the newer version with stronger encryption than WPA-Personal.
WPA-Enterprise and RADIUS use Remote Authentication Dial-In User Service (RADIUS).
Back
Next
Wireless-G PCI Adapter
Setup Wizard v1.1
Model No. WMP54GX4

Figure 5-23: Wireless Security Screen

WEP

Select a level of WEP encryption to use, and then enter a passphrase or WEP key.

WEP - To use WEP encryption, select **64-bit** or **128-bit** characters from the drop-down menu.

Passphrase - Instead of manually entering a WEP key, you can enter a passphrase in the *Passphrase* field, so a WEP key is automatically generated. This case-sensitive passphrase must match the passphrase of your other wireless network devices and is compatible with Linksys wireless products only. (If you have any non-Linksys wireless products, enter the WEP key manually on those products.)

WEP Key- The WEP key you enter must match the WEP key of your wireless network. If you are using 64-bit WEP encryption, then the key must consist of exactly 10 hexadecimal characters. If you are using 128-bit WEP encryption, then the key must consist of exactly 26 hexadecimal characters. Valid hexadecimal characters are "0" to "9" and "A" to "F".

Advanced Users:
TX Key - The default transmit key number is **1**. If your network's access point or wireless router uses transmit key number 2, 3, or 4, select the appropriate number from the *TX Key* drop-down box.

Authentication - The default is set to **Auto**, where it auto-detects for **Shared Key** or **Open** system. Shared Key is when both the sender and the recipient share a WEP key for authentication. Open key is when the sender and the recipient do not share a WEP key for authentication. All devices on your network must use the same authentication type.

Click the **Next** button to continue to the *Confirm New Settings* screen or the **Back** button to return to the previous screen.

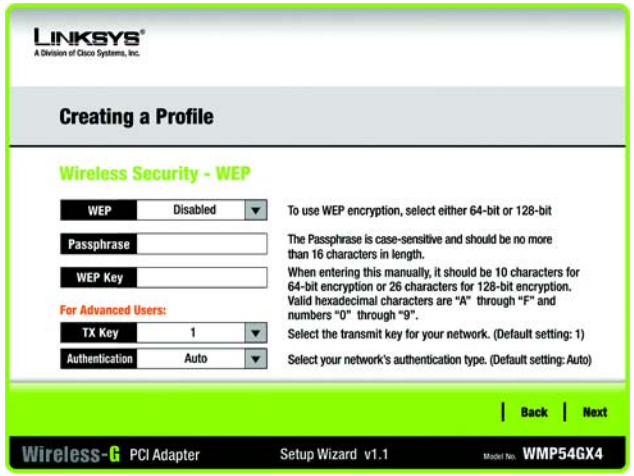

LINKSYS
A Division of Cisco Systems, Inc.
Creating a Profile
Wireless Security - WEP
WEP
Disabled
To use WEP encryption, select either 64-bit or 128-bit
Passphrase
The Passphrase is case-sensitive and should be no more than 16 characters in length.
WEP Key
When entering this manually, it should be 10 characters for 64-bit encryption or 26 characters for 128-bit encryption. Valid hexadecimal characters are "A" through "F" and numbers "0" through "9".
For Advanced Users:
TX Key
1
Select the transmit key for your network. (Default setting: 1)
Authentication
Auto
Select your network's authentication type. (Default setting: Auto)
Back
Next
Wireless-G PCI Adapter
Setup Wizard v1.1
Model No. WMP54GX4

Figure 5-24: Wireless Security - WEP Screen

WPA Personal

Select an encryption method, **TKIP** or **AES**, and then enter a passphrase.

Encryption - Select the type of algorithm, **TKIP** or **AES**, from the *Encryption* drop-down menu.

Passphrase - Enter a Passphrase of 8-63 characters in the *Passphrase* field.

Click the **Next** button to continue to the *Confirm New Settings* screen or the **Back** button to return to the previous screen.

Figure 5-25: Wireless Security - WPA Personal Screen

WPA2 Personal

WPA2 Personal automatically uses AES, which is a stronger encryption method than TKIP. Enter a passphrase on this screen.

Passphrase - Enter a Passphrase of 8-63 characters in the *Passphrase* field.

Click the **Next** button to continue to the *Confirm New Settings* screen or the **Back** button to return to the previous screen.

Figure 5-26: Wireless Security - WPA2 Personal Screen

WPA Enterprise

WPA Enterprise is used in coordination with a RADIUS server. (This should only be used when a RADIUS server is connected to the Router.) WPA Enterprise offers two encryption methods, TKIP and AES, with dynamic encryption keys. It offers two authentication methods, EAP-TLS and PEAP. Select one of these methods and follow the appropriate instructions below.

EAP-TLS

Login Name - Enter the login name of your wireless network.

Server Name - Enter the name of the authentication server (this is optional).

Certificate - Select the certificate you have installed to authenticate you on your wireless network. If you want to use any certificate, keep the default setting, **Trust Any**.

Encryption - Select the type of algorithm you want to use, **TKIP** or **AES**.

PEAP

Login Name - Enter the login name of your wireless network.

Password - Enter the password of your wireless network.

Server Name - Enter the name of the authentication server (this is optional).

Certificate - Select the certificate you have installed to authenticate you on your wireless network. If you want to use any certificate, keep the default setting, **Trust Any**.

Inner Authen. - Select the authentication method used inside the PEAP tunnel.

Encryption - Select the type of algorithm you want to use, **TKIP** or **AES**.

Click the **Next** button to continue to the *Confirm New Settings* screen or the **Back** button to return to the previous screen.

Figure 5-27: Wireless Security - WPA Enterprise Using EAP-TLS Screen

Figure 5-28: Wireless Security - WPA Enterprise Using PEAP Screen

RADIUS

RADIUS uses the security of a RADIUS server. (This should only be used when a RADIUS server is connected to the Router.) It offers two authentication methods, EAP-TLS and PEAP. Select one of these methods and follow the appropriate instructions below.

EAP-TLS

Login Name - Enter the login name of your wireless network.

Server Name - Enter the name of the authentication server (this is optional).

Certificate - Select the certificate you have installed to authenticate you on your wireless network. If you want to use any certificate, keep the default setting, **Trust Any**.

PEAP

Login Name - Enter the login name of your wireless network.

Password - Enter the password of your wireless network.

Server Name - Enter the name of the authentication server (this is optional).

Certificate - Select the certificate you have installed to authenticate you on your wireless network.

Inner Authen. - Select the authentication method used inside the PEAP tunnel.

Encryption - Select the type of algorithm you want to use, **TKIP** or **AES**.

Click the **Next** button to continue to the *Confirm New Settings* screen or the **Back** button to return to the previous screen.

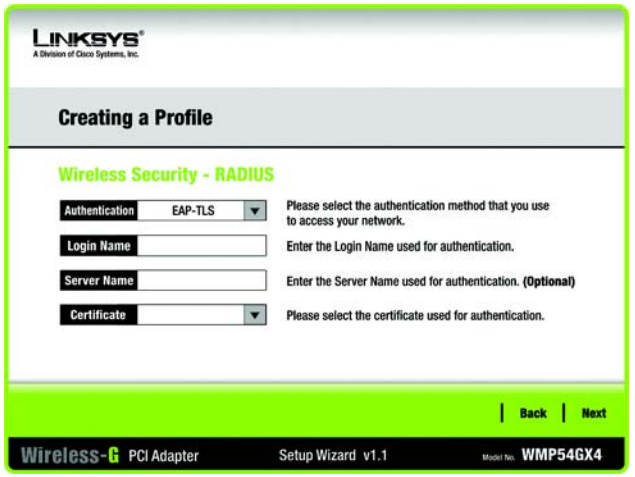


Figure 5-29: Wireless Security - RADIUS Screen

Figure 5-30: Wireless Security - RADIUS Screen

5. The next screen displays all of the Adapter's settings. If these are correct, click **Save** to save these settings to your hard drive. If these settings are not correct, click **Back** to change your settings.

Figure 5-31: Confirm New Settings Screen

6. After the software has been successfully installed, the *Congratulations* screen will appear. Click **Connect to Network** to connect to your network. Click **Return to Profiles screen** to open the Wireless Network Monitor's *Profiles* screen.

Congratulations! The profile is complete.

Figure 5-32: Congratulations Screen

Appendix A: Troubleshooting

This appendix consists of two parts: "Common Problems and Solutions" and "Frequently Asked Questions." This appendix provides solutions to problems that may occur during the installation and operation of the Wireless-G PCI Adapter. Read the description below to solve your problems. If you can't find an answer here, check the Linksys website at *www.linksys.com*.

Common Problems and Solutions

1. ***The Wireless-G PCI Adapter does not work properly.***
   - Reinsert the Wireless-G PCI Adapter into your PC's PCI slot.
   - Right-click on **My Computer** and select **Properties**. Select the device manager and click on the Network Adapter. You will find the Wireless-G PCI Adapter if it has been installed successfully. If you see the yellow exclamation mark, the resources are conflicting. You will see the status of the Wireless-G PCI Adapter. If there is a yellow question mark, please check the following:
   - Make sure that your PC has a free IRQ (Interrupt ReQuest, a hardware interrupt on a PC.)
   - Make sure that you have inserted the right adapter and installed the proper driver.

   If the Wireless-G PCI Adapter does not function after attempting the above steps, remove the adapter and do the following:
   - Uninstall the driver software from your PC.
   - Restart your PC and repeat the hardware and software installation as specified in this User Guide.

2. ***I cannot communicate with the other computers linked via Ethernet in the Infrastructure configuration.***
   - Make sure that the PC to which the Wireless-G PCI Adapter is associated is powered on.
   - Make sure that your Wireless-G PCI Adapter is configured on the same channel and with the same security options as with the other computers in the Infrastructure configuration.

Frequently Asked Questions

Can I run an application from a remote computer over the wireless network?
This will depend on whether or not the application is designed to be used over a network. Consult the application's user guide to determine if it supports operation over a network.

Can I play computer games with other members of the wireless network?
Yes, as long as the game supports multiple players over a LAN (local area network). Refer to the game's user guide for more information.

What is the IEEE 802.11b standard?
It is one of the IEEE standards for wireless networks. The 802.11b standard allows wireless networking hardware from different manufacturers to communicate, provided that the hardware complies with the 802.11b standard. The 802.11b standard states a maximum data transfer rate of 11Mbps and an operating frequency of 2.4GHz.

What is the IEEE 802.11g standard?
It is one of the IEEE standards for wireless networks. The 802.11g standard allows wireless networking hardware from different manufacturers to communicate, provided that the hardware complies with the 802.11g standard. The 802.11g standard states a maximum data transfer rate of 54Mbps and an operating frequency of 2.4GHz.

What IEEE 802.11b features are supported?
The product supports the following IEEE 802.11b functions:

- CSMA/CA plus Acknowledge protocol
- Multi-Channel Roaming
- Automatic Rate Selection
- RTS/CTS feature
- Fragmentation
- Power Management
-

What IEEE 802.11g features are supported?
The product supports the following IEEE 802.11g functions:

- CSMA/CA plus Acknowledge protocol
- OFDM protocol
- Multi-Channel Roaming
- Automatic Rate Selection
- RTS/CTS feature
- Fragmentation
- Power Management

What is ad-hoc mode?

When a wireless network is set to ad-hoc mode, the wireless-equipped computers are configured to communicate directly with each other. The ad-hoc wireless network will not communicate with any wired network.

What is infrastructure mode?

When a wireless network is set to infrastructure mode, the wireless network is configured to communicate with a wired network through a wireless access point.

What is roaming?

Roaming is the ability of a portable computer user to communicate continuously while moving freely throughout an area greater than that covered by a single access point. Before using the roaming function, the workstation must make sure that it is the same channel number with the access point of dedicated coverage area.

To achieve true seamless connectivity, the wireless LAN must incorporate a number of different functions. Each node and access point, for example, must always acknowledge receipt of each message. Each node must maintain contact with the wireless network even when not actually transmitting data. Achieving these functions simultaneously requires a dynamic RF networking technology that links access points and nodes. In such a system, the user's end node undertakes a search for the best possible access to the system. First, it evaluates such factors as signal strength and quality, as well as the message load currently being carried by each access point and the distance of each access point to the wired backbone. Based on that information, the node next selects the right access point and registers its address. Communications between end node and host computer can then be transmitted up and down the backbone.

As the user moves on, the end node's RF transmitter regularly checks the system to determine whether it is in touch with the original access point or whether it should seek a new one. When a node no longer receives acknowledgment from its original access point, it undertakes a new search. Upon finding a new access point, it then re-registers, and the communication process continues.

What is ISM band?

The FCC and their counterparts outside of the U.S. have set aside bandwidth for unlicensed use in the ISM (Industrial, Scientific and Medical) band. Spectrum in the vicinity of 2.4 GHz, in particular, is being made available worldwide. This presents a truly revolutionary opportunity to place convenient high-speed wireless capabilities in the hands of users around the globe.

What is Spread Spectrum?

Spread Spectrum technology is a wideband radio frequency technique developed by the military for use in reliable, secure, mission-critical communications systems. It is designed to trade off bandwidth efficiency for reliability, integrity, and security. In other words, more bandwidth is consumed than in the case of narrowband transmission, but the trade-off produces a signal that is, in effect, louder and thus easier to detect, provided that

the receiver knows the parameters of the spread-spectrum signal being broadcast. If a receiver is not tuned to the right frequency, a spread-spectrum signal looks like background noise. There are two main alternatives, Direct Sequence Spread Spectrum (DSSS) and Frequency Hopping Spread Spectrum (FHSS).

What is DSSS? What is FHSS? And what are their differences?

Frequency-Hopping Spread-Spectrum (FHSS) uses a narrowband carrier that changes frequency in a pattern that is known to both transmitter and receiver. Properly synchronized, the net effect is to maintain a single logical channel. To an unintended receiver, FHSS appears to be short-duration impulse noise. Direct-Sequence Spread-Spectrum (DSSS) generates a redundant bit pattern for each bit to be transmitted. This bit pattern is called a chip (or chipping code). The longer the chip, the greater the probability that the original data can be recovered. Even if one or more bits in the chip are damaged during transmission, statistical techniques embedded in the radio can recover the original data without the need for retransmission. To an unintended receiver, DSSS appears as low power wideband noise and is rejected (ignored) by most narrowband receivers.

Would the information be intercepted while transmitting on air?

The Adapter features two-fold protection in security. On the hardware side, as with Direct Sequence Spread Spectrum technology, it has the inherent security feature of scrambling. On the software side, the Adapter offers a variety of security methods, including WEP and WPA, to enhance security and access control. For more information, refer to "Appendix C: Wireless Security."

What is WEP?

WEP is Wired Equivalent Privacy, a data privacy mechanism based on a shared key algorithm, as described in the IEEE 802.11 standard. For more information, refer to "Appendix C: Wireless Security."

What is WPA?

WPA is Wi-Fi Protected Access, a wireless security protocol that can be used in conjunction with a RADIUS server. For more information, refer to "Appendix C: Wireless Security."

What is RADIUS?

RADIUS is Remote Authentication Dial-In User Service, which uses an authentication server to control network access. For more information, refer to "Appendix C: Wireless Security."

AppendixB:UsingWindowsXPWirelessZeroConfiguration

If your computer is running Windows XP, then this choice will be available. If you want to use Windows XP Wireless Zero Configuration to control the Adapter, instead of using the Wireless Network Monitor, then right-click on the Wireless Network Monitor and select **Use Windows XP Wireless Configuration**.

If you want to switch back to the Wireless Network Monitor, right-click the **Wireless Network Monitor** icon, and select **Use Linksys Wireless Network Monitor**.

Figure B-1: Wireless Network Monitor Icon

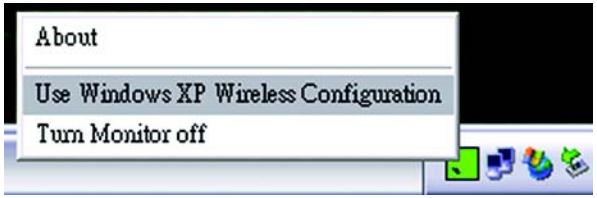


Figure B-2: Windows XP - Use Windows XP Wireless Configuration

1. After installing the Adapter, the Windows XP Wireless Zero Configuration icon will appear in your computer's system tray. Double-click the icon.

NOTE: For more information about Windows XP Wireless Zero Configuration, refer to Windows Help.

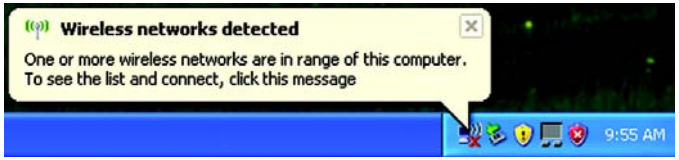

Wireless networks detected
One or more wireless networks are in range of this computer.
To see the list and connect, click this message
9:55 AM

Figure B-3: Windows XP Wireless Configuration Icon

2. The screen that appears will show any available wireless network. Select the network you want. Click the **Connect** button.

   If your network does not have wireless security enabled, go to step 3.

   If your network does have wireless security enabled, go to step 4.

NOTE: Steps 2 and 3 are the instructions and screenshots for Windows XP with Service Pack 2 installed.

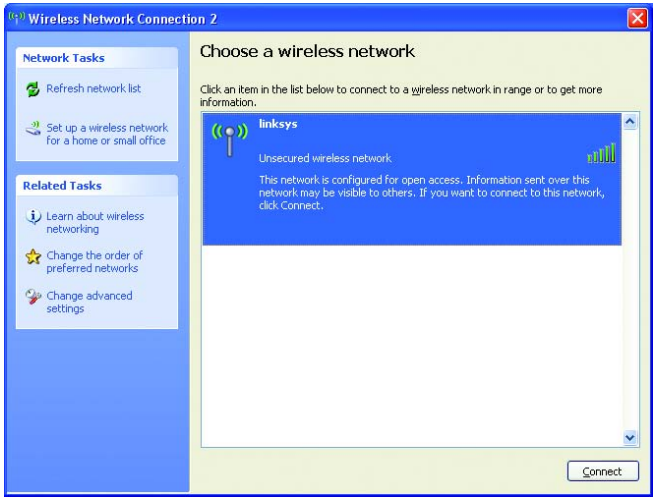

Wireless Network Connection 2
Network Tasks
Refresh network list
Set up a wireless network for a home or small office
Related Tasks
Learn about wireless networking
Change the order of preferred networks
Change advanced settings
Choose a wireless network
Click an item in the list below to connect to a wireless network in range or to get more information.
linksys
Unsecured wireless network
This network is configured for open access. Information sent over this network may be visible to others. If you want to connect to this network, click Connect.
Connect

Figure B-4: Available Wireless Network

3. If your network does not have wireless security enabled, click the **Connect Anyway** button to connect the Adapter to your network.

Wireless Network Connection
You are connecting to the unsecured network "linksys". Information sent over this network is not encrypted and might be visible to other people.
Connect Anyway
Cancel

Figure B-5: No Wireless Security

4. If your network uses WEP encryption as its wireless security method, enter the WEP Key used in the *Network Key* and *Confirm network key* fields. If your network uses WPA Personal for wireless security, enter the Passphrase used in the *Network Key* and *Confirm network key* fields. Click the **Connect** button.

Wireless Network Connection
The network 'linksys' requires a network key (also called a WEP key or WPA key). A network key helps prevent unknown intruders from connecting to this network.
Type the key, and then click Connect.
Network key:
Confirm network key:
Connect
Cancel

Figure B-6: Network Connection - Wireless Security

NOTE: Windows XP Wireless Configuration does not support the use of a passphrase. Enter the exact WEP key used by your wireless router or access point.

5. Your wireless network will appear as *Connected* when your connection is active.

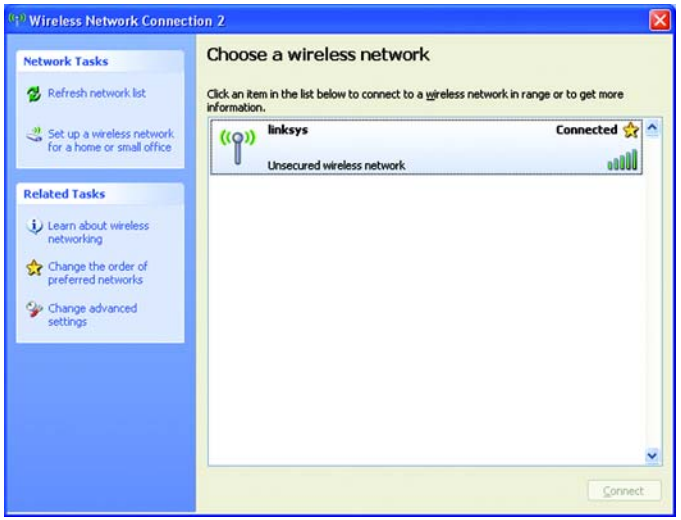

Wireless Network Connection 2
Network Tasks
Refresh network list
Set up a wireless network for a home or small office
Related Tasks
Learn about wireless networking
Change the order of preferred networks
Change advanced settings
Choose a wireless network
Click an item in the list below to connect to a wireless network in range or to get more information.
linksys
Connected
Unsecured wireless network
Connect

Figure B-7: Wireless Network Connection

For more information about wireless networking on a Windows XP computer, click the **Start** button, select **Help**, and choose **Support**. Enter the keyword **wireless** in the field provided, and press the **Enter** key.

You are now connected to your wireless network.

Appendix C: Wireless Security

Linksys wants to make wireless networking as safe and easy for you as possible. The current generation of Linksys products provide several network security features, but they require specific action on your part for implementation. So, keep the following in mind whenever you are setting up or using your wireless network.

Security Precautions

The following is a complete list of security precautions to take (at least steps 1 through 5 should be followed):

1. Change the default SSID.
2. Disable SSID Broadcast.
3. Change the default password for the Administrator account.
4. Enable MAC Address Filtering.
5. Change the SSID periodically.
6. Use the highest encryption algorithm possible. Use WPA if it is available. Please note that this may reduce your network performance.
7. Change the encryption keys periodically.

NOTE: Some of these security features are available only through the network router or access point. Refer to the router or access point's documentation for more information.

Security Threats Facing Wireless Networks

Wireless networks are easy to find. Hackers know that in order to join a wireless network, wireless networking products first listen for "beacon messages". These messages can be easily decrypted and contain much of the network's information, such as the network's SSID (Service Set Identifier). Here are the steps you can take:

Change the administrator's password regularly. With every wireless networking device you use, keep in mind that network settings (SSID, WEP keys, etc.) are stored in its firmware. Your network administrator is the only person who can change network settings. If a hacker gets a hold of the administrator's password, he, too, can change those settings. So, make it harder for a hacker to get that information. Change the administrator's password regularly.

SSID. There are several things to keep in mind about the SSID:

1. Disable Broadcast
2. Make it unique
3. Change it often

Most wireless networking devices will give you the option of broadcasting the SSID. While this option may be more convenient, it allows anyone to log into your wireless network. This includes hackers. So, don't broadcast the SSID.

Wireless networking products come with a default SSID set by the factory. (The Linksys default SSID is "linksys".) Hackers know these defaults and can check these against your network. Change your SSID to something unique and not something related to your company or the networking products you use.

Change your SSID regularly so that any hackers who have gained access to your wireless network will have to start from the beginning in trying to break in.

MAC Addresses. Enable MAC Address filtering. MAC Address filtering will allow you to provide access to only those wireless nodes with certain MAC Addresses. This makes it harder for a hacker to access your network with a random MAC Address.

WEP Encryption. Wired Equivalent Privacy (WEP) is often looked upon as a cure-all for wireless security concerns. This is overstating WEP's ability. Again, this can only provide enough security to make a hacker's job more difficult.

There are several ways that WEP can be maximized:

1. Use the highest level of encryption possible
2. Use "Shared Key" authentication
3. Change your WEP key regularly

WPA. Wi-Fi Protected Access (WPA) is the newest and best available standard in Wi-Fi security. Four modes are available: WPA-Personal, WPA2-Personal, WPA-Enterprise, and RADIUS. WPA-Personal gives you a choice of two encryption methods: TKIP (Temporal Key Integrity Protocol), which utilizes a stronger encryption method and incorporates Message Integrity Code (MIC) to provide protection against hackers, and AES (Advanced Encryption Standard), which utilizes a symmetric 128-Bit block data encryption. WPA2-Personal only uses AES encryption, which is stronger than TKIP. WPA-Enterprise offers two encryption methods, TKIP and AES, with dynamic encryption keys. RADIUS (Remote Authentication Dial-In User Service) utilizes a RADIUS server for authentication.

IMPORTANT: Always remember that each device in your wireless network MUST use the same encryption method and encryption key or your wireless network will not function properly.

WPA-Personal. If you do not have a RADIUS server, select the type of algorithm you want to use, TKIP or AES, and enter a password in the *Passphrase* field of 8-63 characters.

WPA2-Personal. Enter a password in the *Passphrase* field of 8-63 characters.

WPA-Enterprise. WPA used in coordination with a RADIUS server. (This should only be used when a RADIUS server is connected to the Router or other device.) WPA-Enterprise offers two encryption methods, TKIP and AES, with dynamic encryption keys. Enter the RADIUS server's IP Address and port number, along with a key shared between the device and the server. Last, enter a Group Key Renewal period, which instructs the device how often it should change the encryption keys.

RADIUS. WEP used in coordination with a RADIUS server. (This should only be used when a RADIUS server is connected to the Router or other device.) First, enter the RADIUS server's IP Address and port number, along with a key shared between the device and the server. Then, select a WEP key and a level of WEP encryption, and either generate a WEP key through the Passphrase or enter the WEP key manually.

Implementing encryption may have a negative impact on your network's performance, but if you are transmitting sensitive data over your network, encryption should be used.

These security recommendations should help keep your mind at ease while you are enjoying the most flexible and convenient technology Linksys has to offer.

Appendix D: Windows Help

Almost all wireless products require Microsoft Windows. Windows is the most used operating system in the world and comes with many features that help make networking easier. These features can be accessed through Windows Help and are described in this appendix.

TCP/IP

Before a computer can communicate with an access point or wireless router, TCP/IP must be enabled. TCP/IP is a set of instructions, or protocol, all PCs follow to communicate over a network. This is true for wireless networks as well. Your PCs will not be able to utilize wireless networking without having TCP/IP enabled. Windows Help provides complete instructions on enabling TCP/IP.

Shared Resources

If you wish to share printers, folder, or files over your network, Windows Help provides complete instructions on utilizing shared resources.

Network Neighborhood/My Network Places

Other PCs on your network will appear under Network Neighborhood or My Network Places (depending upon the version of Windows you're running). Windows Help provides complete instructions on adding PCs to your network.

Appendix E: Glossary

This glossary contains some basic networking terms you may come across when using this product. For more advanced terms, see the complete Linksys glossary at http://www.linksys.com/glossary.

Access Point - A device that allows wireless-equipped computers and other devices to communicate with a wired network. Also used to expand the range of a wireless network.

Ad-hoc - A group of wireless devices communicating directly with each other (peer-to-peer) without the use of an access point.

AES (**A**dvanced **E**ncryption **S**tandard) - A security method that uses symmetric 128-bit block data encryption.

Bandwidth - The transmission capacity of a given device or network.

Bit - A binary digit.

Boot - To start a device and cause it to start executing instructions.

Broadband - An always-on, fast Internet connection.

Browser - An application program that provides a way to look at and interact with all the information on the World Wide Web.

Byte - A unit of data that is usually eight bits long

Cable Modem - A device that connects a computer to the cable television network, which in turn connects to the Internet.

Daisy Chain - A method used to connect devices in a series, one after the other.

DDNS (**D**ynamic **D**omain **N**ame **S**ystem) - Allows the hosting of a website, FTP server, or e-mail server with a fixed domain name (e.g., www.xyz.com) and a dynamic IP address.

Default Gateway - A device that forwards Internet traffic from your local area network.

DHCP (**D**ynamic **H**ost **C**onfiguration **P**rotocol) - A networking protocol that allows administrators to assign temporary IP addresses to network computers by "leasing" an IP address to a user for a limited amount of time, instead of assigning permanent IP addresses.

DMZ (**Dem**ilitarized **Z**one) - Removes the Router's firewall protection from one PC, allowing it to be "seen" from the Internet.

DNS (**D**omain **N**ame **S**erver) - The IP address of your ISP's server, which translates the names of websites into IP addresses.

Domain - A specific name for a network of computers.

Download - To receive a file transmitted over a network.

DSL (**D**igital **S**ubscriber **L**ine) - An always-on broadband connection over traditional phone lines.

Dynamic IP Address - A temporary IP address assigned by a DHCP server.

EAP (**E**xtensible **A**uthentication **P**rotocol) - A general authentication protocol used to control network access. Many specific authentication methods work within this framework.

Encryption - Encoding data transmitted in a network.

Ethernet - IEEE standard network protocol that specifies how data is placed on and retrieved from a common transmission medium.

Firewall - A set of related programs located at a network gateway server that protects the resources of a network from users from other networks.

Firmware - The programming code that runs a networking device.

FTP (**F**ile **T**ransfer **P**rotocol) - A protocol used to transfer files over a TCP/IP network.

Full Duplex - The ability of a networking device to receive and transmit data simultaneously.

Gateway - A device that interconnects networks with different, incompatible communications protocols.

Half Duplex - Data transmission that can occur in two directions over a single line, but only one direction at a time.

HTTP (**H**yper**T**ext **T**ransport **P**rotocol) - The communications protocol used to connect to servers on the World Wide Web.

Infrastructure - A wireless network that is bridged to a wired network via an access point.

IP (**I**nternet **P**rotocol) - A protocol used to send data over a network.

IP Address - The address used to identify a computer or device on a network.

IPCONFIG - A Windows 2000 and XP utility that displays the IP address for a particular networking device.

IPSec (**I**nternet **P**rotocol **Sec**urity) - A VPN protocol used to implement secure exchange of packets at the IP layer.

ISP (**I**nternet **S**ervice **P**rovider) - A company that provides access to the Internet.

LAN - The computers and networking products that make up your local network.

MAC (**M**edia **A**ccess **C**ontrol) **Address** - The unique address that a manufacturer assigns to each networking device.

Mbps (**M**ega**B**its **P**er **S**econd) - One million bits per second; a unit of measurement for data transmission.

NAT (**N**etwork **A**ddress **T**ranslation) - NAT technology translates IP addresses of a local area network to a different IP address for the Internet.

Network - A series of computers or devices connected for the purpose of data sharing, storage, and/or transmission between users.

Packet - A unit of data sent over a network.

Passphrase - Used much like a password, a passphrase simplifies the WEP encryption process by automatically generating the WEP encryption keys for Linksys products.

Ping (**P**acket **IN**ternet **G**roper) - An Internet utility used to determine whether a particular IP address is online.

POP3 (**P**ost **O**ffice **P**rotocol **3**) - A standard mail server commonly used on the Internet.

Port - The connection point on a computer or networking device used for plugging in cables or adapters.

Power **o**ver **E**thernet (**PoE**) - A technology enabling an Ethernet network cable to deliver both data and power.

PPPoE (**P**oint to **P**oint **P**rotocol **o**ver **E**thernet) - A type of broadband connection that provides authentication (username and password) in addition to data transport.

PPTP (**P**oint-to-**P**oint **T**unneling **P**rotocol) - A VPN protocol that allows the Point to Point Protocol (PPP) to be tunneled through an IP network. This protocol is also used as a type of broadband connection in Europe.

RADIUS (**R**emote **A**uthentication **D**ial-**I**n **U**ser **S**ervice) - A protocol that uses an authentication server to control network access.

RJ-45 (**R**egistered **J**ack-**45**) - An Ethernet connector that holds up to eight wires.

Roaming - The ability to take a wireless device from one access point's range to another without losing the connection.

Router - A networking device that connects multiple networks together.

Server - Any computer whose function in a network is to provide user access to files, printing, communications, and other services.

SMTP (**S**imple **M**ail **T**ransfer **P**rotocol) - The standard e-mail protocol on the Internet.

SNMP (**S**imple **N**etwork **M**anagement **P**rotocol) - A widely used network monitoring and control protocol.

SPI (**S**tateful **P**acket **I**nspection) **Firewall** - A technology that inspects incoming packets of information before allowing them to enter the network.

SSID (**S**ervice **S**et **ID**entifier) - Your wireless network's name.

Static IP Address - A fixed address assigned to a computer or device that is connected to a network.

Static Routing - Forwarding data in a network via a fixed path.

Subnet Mask - An address code that determines the size of the network.

Switch - 1. A data switch that connects computing devices to host computers, allowing a large number of devices to share a limited number of ports. 2. A device for making, breaking, or changing the connections in an electrical circuit.

TCP (**T**ransmission **C**ontrol **P**rotocol) - A network protocol for transmitting data that requires acknowledgement from the recipient of data sent.

TCP/IP (**T**ransmission **C**ontrol **P**rotocol/**I**nternet **P**rotocol) - A set of instructions PCs use to communicate over a network.

Telnet - A user command and TCP/IP protocol used for accessing remote PCs.

TFTP (**T**rivial **F**ile **T**ransfer **P**rotocol) - A version of the TCP/IP FTP protocol that has no directory or password capability.

Throughput - The amount of data moved successfully from one node to another in a given time period.

TKIP (**T**emporal **K**ey **I**ntegrity **P**rotocol) - a wireless encryption protocol that provides dynamic encryption keys for each packet transmitted.

Topology - The physical layout of a network.

TX Rate - Transmission Rate.

Upgrade - To replace existing software or firmware with a newer version.

Upload - To transmit a file over a network.

URL (**U**niform **R**esource **L**ocator) - The address of a file located on the Internet.

VPN (**V**irtual **P**rivate **N**etwork) - A security measure to protect data as it leaves one network and goes to another over the Internet.

WAN (**W**ide **A**rea **N**etwork)- The Internet.

WEP (**W**ired **E**quivalent **P**rivacy) - A method of encrypting network data transmitted on a wireless network for greater security.

WLAN (**W**ireless **L**ocal **A**rea **N**etwork) - A group of computers and associated devices that communicate with each other wirelessly.

WPA (**W**i-Fi **P**rotected **A**ccess) - a wireless security protocol using TKIP (Temporal Key Integrity Protocol) encryption, which can be used in conjunction with a RADIUS server.

Appendix F: Specifications

Model	WMP54GX4	
Standards	802.11g, 802.11b	
# of Antennas	Three	
Connector Type	SMA	
Detachable	Yes	
RF Pwr (EIRP) in dBm	19 dBm (b), 19 dBm (g)	
Antenna Gain in dBi	2 dBi	
Security Features	WPA, WEP, and 802.1x	
WEP Key Bits	64/128bit	
Dimensions	Antenna Stand	3.07" x 5.51" x 2.84" (78 mm x 140 mm x 72 mm)
	PCI Card	6.772" x 4.92" x 0.71" (172 mm x 125 mm x 18 mm)
Unit Weight	Antenna Stand	7.1 oz. (0.20 kg)
	PCI Card	4.9 oz. (0.14 kg)
Power	3.3V ± 5%	
Certifications	FCC, CE, ICES-03, Wi-Fi	
Operating Temp.	0° C to 60° C (32° F to 140° F)	

Storage Temp.	-20° C to 85° C (-4° F to 185° F)
Operating Humidity	Max. 90% Non-Condensing
Storage Humidity	5% to 90% Non-Condensing

Appendix G: Warranty Information

LIMITED WARRANTY

Linksys warrants to You that, for a period of three years (the “Warranty Period”), your Linksys Product will be substantially free of defects in materials and workmanship under normal use. Your exclusive remedy and Linksys' entire liability under this warranty will be for Linksys at its option to repair or replace the Product or refund Your purchase price less any rebates. This limited warranty extends only to the original purchaser.

If the Product proves defective during the Warranty Period call Linksys Technical Support in order to obtain a Return Authorization Number, if applicable. BE SURE TO HAVE YOUR PROOF OF PURCHASE ON HAND WHEN CALLING. If You are requested to return the Product, mark the Return Authorization Number clearly on the outside of the package and include a copy of your original proof of purchase. RETURN REQUESTS CANNOT BE PROCESSED WITHOUT PROOF OF PURCHASE. You are responsible for shipping defective Products to Linksys. Linksys pays for UPS Ground shipping from Linksys back to You only. Customers located outside of the United States of America and Canada are responsible for all shipping and handling charges.

ALL IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED TO THE DURATION OF THE WARRANTY PERIOD. ALL OTHER EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF NON-INFRINGEMENT, ARE DISCLAIMED. Some jurisdictions do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to You. This warranty gives You specific legal rights, and You may also have other rights which vary by jurisdiction.

This warranty does not apply if the Product (a) has been altered, except by Linksys, (b) has not been installed, operated, repaired, or maintained in accordance with instructions supplied by Linksys, or (c) has been subjected to abnormal physical or electrical stress, misuse, negligence, or accident. In addition, due to the continual development of new techniques for intruding upon and attacking networks, Linksys does not warrant that the Product will be free of vulnerability to intrusion or attack.

TO THE EXTENT NOT PROHIBITED BY LAW, IN NO EVENT WILL LINKSYS BE LIABLE FOR ANY LOST DATA, REVENUE OR PROFIT, OR FOR SPECIAL, INDIRECT, CONSEQUENTIAL, INCIDENTAL OR PUNITIVE DAMAGES, REGARDLESS OF THE THEORY OF LIABILITY (INCLUDING NEGLIGENCE), ARISING OUT OF OR RELATED TO THE USE OF OR INABILITY TO USE THE PRODUCT (INCLUDING ANY SOFTWARE), EVEN IF LINKSYS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT WILL LINKSYS’ LIABILITY EXCEED THE AMOUNT PAID BY YOU FOR THE PRODUCT. The foregoing limitations will apply even if any warranty or remedy provided under this Agreement fails of its essential purpose. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to You.

Please direct all inquiries to: Linksys, P.O. Box 18558, Irvine, CA 92623.

Appendix H: Regulatory Information

FCC Statement

This product has been tested and complies with the specifications for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used according to the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which is found by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment or devices
- Connect the equipment to an outlet other than the receiver's
- Consult a dealer or an experienced radio/TV technician for assistance

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

Safety Notices

Caution: To reduce the risk of fire, use only No.26 AWG or larger telecommunication line cord.

Do not use this product near water, for example, in a wet basement or near a swimming pool.

Avoid using this product during an electrical storm. There may be a remote risk of electric shock from lightning.

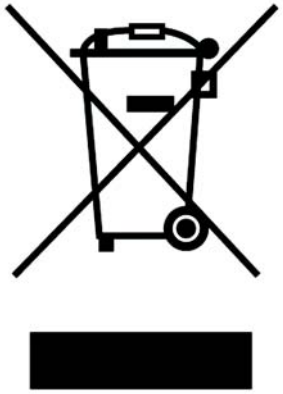
Industry Canada (Canada)

This device complies with Canadian ICES-003 and RSS210 rules.

Cet appareil est conforme aux normes NMB-003 et RSS210 d'Industry Canada.

User Information for Consumer Products Covered by EU Directive 2002/96/EC on Waste Electric and Electronic Equipment (WEEE)

This document contains important information for users with regards to the proper disposal and recycling of Linksys products. Consumers are required to comply with this notice for all electronic products bearing the following symbol:



English

Environmental Information for Customers in the European Union

European Directive 2002/96/EC requires that the equipment bearing this symbol on the product and/or its packaging must not be disposed of with unsorted municipal waste. The symbol indicates that this product should be disposed of separately from regular household waste streams. It is your responsibility to dispose of this and other electric and electronic equipment via designated collection facilities appointed by the government or local authorities. Correct disposal and recycling will help prevent potential negative consequences to the environment and human health. For more detailed information about the disposal of your old equipment, please contact your local authorities, waste disposal service, or the shop where you purchased the product.

Ceština/Czech

Informace o ochraně životního prostředí pro zákazníky v zemích Evropské unie

Evropská směrnice 2002/96/ES zakazuje, aby zařízení označené tímto symbolem na produktu anebo na obalu bylo likvidováno s netříděným komunálním odpadem. Tento symbol udává, že daný produkt musí být likvidován odděleně od běžného komunálního odpadu. Odpovídáte za likvidaci tohoto produktu a dalších elektrických a elektronických zařízení prostřednictvím určených sběrných míst stanovených vládou nebo místními úřady. Správná likvidace a recyklace pomáhá předcházet potenciálním negativním dopadům na životní prostředí a lidské zdraví. Podrobnější informace o likvidaci starého vybavení si laskavě vyžádejte od místních úřadů, podniku zabývajícího se likvidací komunálních odpadů nebo obchodu, kde jste produkt zakoupili.

Dansk/Danish

Miljøinformation for kunder i EU

EU-direktiv 2002/96/EF kræver, at udstyr der bærer dette symbol på produktet og/eller emballagen ikke må bortskaffes som usorteret kommunalt affald. Symbolet betyder, at dette produkt skal bortskaffes adskilt fra det almindelige husholdningsaffald. Det er dit ansvar at bortskaffe dette og andet elektrisk og elektronisk udstyr via bestemte indsamlingssteder udpeget af staten eller de lokale myndigheder. Korrekt bortskaffelse og genvinding vil hjælpe med til at undgå mulige skader for miljøet og menneskers sundhed. Kontakt venligst de lokale myndigheder, renovationstjenesten eller den butik, hvor du har købt produktet, angående mere detaljeret information om bortskaffelse af dit gamle udstyr.

Deutsch/German

Umweltinformation für Kunden innerhalb der Europäischen Union

Die Europäische Richtlinie 2002/96/EC verlangt, dass technische Ausrüstung, die direkt am Gerät und/oder an der Verpackung mit diesem Symbol versehen ist nicht zusammen mit unsortiertem Gemeindeabfall entsorgt werden darf. Das Symbol weist darauf hin, dass das Produkt von regulärem Haushaltmüll getrennt entsorgt werden sollte. Es liegt in Ihrer Verantwortung, dieses Gerät und andere elektrische und elektronische Geräte über die dafür zuständigen und von der Regierung oder örtlichen Behörden dazu bestimmten Sammelstellen zu entsorgen. Ordnungsgemäßes Entsorgen und Recyceln trägt dazu bei, potentielle negative Folgen für Umwelt und die menschliche Gesundheit zu vermeiden. Wenn Sie weitere Informationen zur Entsorgung Ihrer Altgeräte benötigen, wenden Sie sich bitte an die örtlichen Behörden oder städtischen Entsorgungsdienste oder an den Händler, bei dem Sie das Produkt erworben haben.

Eesti/Estonian

Keskkonnaalane informatsioon Euroopa Liidus asuvatele klientidele

Euroopa Liidu direktiivi 2002/96/EÜ nõuete kohaselt on seadmeid, millel on tootel või pakendil käesolev sümbol, keelatud kõrvaldada koos sorteerimata olmejäätmetega. See sümbol näitab, et toode tuleks kõrvaldada eraldi tavalistest olmejäätmevoogudest. Olete kohustatud kõrvaldama käesoleva ja ka muud elektri- ja elektroonikaseadmed riigi või kohalike ametiasutuste poolt ette nähtud kogumispunktide kaudu. Seadmete korrektne kõrvaldamine ja ringlussevõtt aitab vältida võimalikke negatiivseid tagajärgi keskkonnale ning inimeste tervisele. Vanade seadmete kõrvaldamise kohta täpsema informatsiooni saamiseks võtke palun ühendust kohalike ametiasutustega, jäätmekäitlusfirmaga või kauplusega, kust te toote ostsite.

Español/Spanish

Información medioambiental para clientes de la Unión Europea

La Directiva 2002/96/CE de la UE exige que los equipos que lleven este símbolo en el propio aparato y/o en su embalaje no deben eliminarse junto con otros residuos urbanos no seleccionados. El símbolo indica que el producto en cuestión debe separarse de los residuos domésticos convencionales con vistas a su eliminación. Es responsabilidad suya desechar este y cualesquiera otros aparatos eléctricos y electrónicos a través de los puntos de recogida que ponen a su disposición el gobierno y las autoridades locales. Al desechar y reciclar correctamente estos aparatos estará contribuyendo a evitar posibles consecuencias negativas para el medio ambiente y la salud de las personas. Si desea obtener información más detallada sobre la eliminación segura de su aparato usado, consulte a las autoridades locales, al servicio de recogida y eliminación de residuos de su zona o pregunte en la tienda donde adquirió el producto.

Ξλληνικά/Greek

Στοιχεία περιβαλλοντικής προστασίας για πελάτες εντός της Ευρωπαϊκής Ένωσης

Η Κοινοτική Οδηγία 2002/96/EC απαιτεί ότι ο εξοπλισμός ο οποίος φέρει αυτό το σύμβολο στο προϊόν και/ή στη συσκευασία του δεν πρέπει να απορρίπτεται μαζί με τα μικτά κοινοτικά απορρίμματα. Το σύμβολο υποδεικνύει ότι αυτό το προϊόν θα πρέπει να απορρίπτεται ξεχωριστά από τα συνήθη οικιακά απορρίμματα. Είστε υπεύθυνος για την απόρριψη του παρόντος και άλλου ηλεκτρικού και ηλεκτρονικού εξοπλισμού μέσω των καθορισμένων εγκαταστάσεων συγκέντρωσης απορριμμάτων οι οποίες παρέχονται από το κράτος ή τις αρμόδιες τοπικές αρχές. Η σωστή απόρριψη και ανακύκλωση συμβάλλει στην πρόληψη πιθανών αρνητικών συνεπειών για το περιβάλλον και την υγεία. Για περισσότερες πληροφορίες σχετικά με την απόρριψη του παλιού σας εξοπλισμού, παρακαλώ επικοινωνήστε με τις τοπικές αρχές, τις υπηρεσίες απόρριψης ή το κατάστημα από το οποίο αγοράσατε το προϊόν.

Français/French

Informations environnementales pour les clients de l'Union européenne

La directive européenne 2002/96/CE exige que l'équipement sur lequel est apposé ce symbole sur le produit et/ou son emballage ne soit pas jeté avec les autres ordures ménagères. Ce symbole indique que le produit doit être éliminé dans un circuit distinct de celui pour les déchets des ménages. Il est de votre responsabilité de jeter ce matériel ainsi que tout autre matériel électrique ou électronique par les moyens de collecte indiqués par le gouvernement et les pouvoirs publics des collectivités territoriales. L'élimination et le recyclage en bonne et due forme ont pour but de lutter contre l'impact néfaste potentiel de ce type de produits sur l'environnement et la santé publique. Pour plus d'informations sur le mode d'élimination de votre ancien équipement, veuillez prendre contact avec les pouvoirs publics locaux, le service de traitement des déchets, ou l'endroit où vous avez acheté le produit.

Italiano/Italian

Informazioni relative all'ambiente per i clienti residenti nell'Unione Europea

La direttiva europea 2002/96/EC richiede che le apparecchiature contrassegnate con questo simbolo sul prodotto e/o sull'imballaggio non siano smaltite insieme ai rifiuti urbani non differenziati. Il simbolo indica che questo prodotto non deve essere smaltito insieme ai normali rifiuti domestici. È responsabilità del proprietario smaltire sia questi prodotti sia le altre apparecchiature elettriche ed elettroniche mediante le specifiche strutture di raccolta indicate dal governo o dagli enti pubblici locali. Il corretto smaltimento ed il riciclaggio aiuteranno a prevenire conseguenze potenzialmente negative per l'ambiente e per la salute dell'essere umano. Per ricevere informazioni più dettagliate circa lo smaltimento delle vecchie apparecchiature in Vostro possesso, Vi invitiamo a contattare gli enti pubblici di competenza, il servizio di smaltimento rifiuti o il negozio nel quale avete acquistato il prodotto.

Latviešu valoda/Latvian

Ekoloģiska informācija klientiem Eiropas Savienības jurisdikcijā

Direktīvā 2002/96/EK ir prasība, ka aprīkojumu, kam pievienota zīme uz paša izstrādājuma vai uz tā iesaiņojuma, nedrīkst izmest nešķirotā veidā kopā ar komunālajiem atkritumiem (tiem, ko rada vietēji iedzīvotāji un uzņēmumi). Šī zīme nozīmē to, ka šī ierīce ir jāizmet atkritumos tā, lai tā nenonāktu kopā ar parastiem mājsaimniecības atkritumiem. Jūsu pienākums ir šo un citas elektriskas un elektroniskas ierīces izmest atkritumos, izmantojot īpašus atkritumu savākšanas veidus un līdzekļus, ko nodrošina valsts un pašvaldību iestādes. Ja izmešana atkritumos un pārstrāde tiek veikta pareizi, tad mazinās iespējamais kaitējums dabai un cilvēku veselībai. Sīkākas ziņas par novecojuša aprīkojuma izmešanu atkritumos jūs varat saņemt vietējā pašvaldībā, atkritumu savākšanas dienestā, kā arī veikalā, kur iegādājāties šo izstrādājumu.

Lietuvškai/Lithuanian

Aplinkosaugos informacija, skirta Europos Sąjungos vartotojams

Europos direktyva 2002/96/EC numato, kad įrangos, kuri ir (arba) kurios pakuotė yra pažymėta šiuo simboliu, negalima šalinti kartu su nerūšiuotomis komunalinėmis atliekomis. Šis simbolis rodo, kad gaminį reikia šalinti atskirai nuo bendro buitinių atliekų srauto. Jūs privalote užtikrinti, kad ši ir kita elektros ar elektroninė įranga būtų šalinama per tam tikras nacionalinės ar vietinės valdžios nustatytas atliekų rinkimo sistemas. Tinkamai šalinant ir perdirbant atliekas, bus išvengta galimos žalos aplinkai ir žmonių sveikatai. Daugiau informacijos apie jūsų senos įrangos šalinimą gali pateikti vietinės valdžios institucijos, atliekų šalinimo tarnybos arba parduotuvės, kuriose įsigijote tą gaminį.

Malti/Maltese

Informazzjoni Ambjentali għal Klijenti fl-Unjoni Ewropea

Id-Direttiva Ewropea 2002/96/KE titlob li t-tagħmir li jkun fih is-simbolu fuq il-prodott u/jew fuq l-ippakkjar ma jistax jintrema ma' skart muniċipali li ma ġiex isseparat. Is-simbolu jindika li dan il-prodott għandu jintrema separatament minn ma' l-iskart domestiku regolari. Hija responsabbiltà tiegħek li tarmi dan it-tagħmir u kull tagħmir ieħor ta' l-elettriku u elettroniku permezz ta' faċilitajiet ta' ġbir appuntati apposta mill-gvern jew mill-awtoritajiet lokali. Ir-rimi b'mod korrett u r-riċiklaġġ jgħin jipprevjeni konsegwenzi negattivi potenzjali għall-ambjent u għas-saħħa tal-bniedem. Għal aktar informazzjoni dettaljata dwar ir-rimi tat-tagħmir antik tiegħek, jekk jogħġbok ikkuntattja lill-awtoritajiet lokali tiegħek, is-servizzi għar-rimi ta' l-iskart, jew il-ħanut minn fejn xtrajt il-prodott.

Magyar/Hungarian

Környezetvédelmi információ az európai uniós vásárlók számára

A 2002/96/EC számú európai uniós irányelv megkívánja, hogy azokat a termékeket, amelyeken, és/vagy amelyek csomagolásán az alábbi címke megjelenik, tilos a többi szelektálatlan lakossági hulladékkal együtt kidobni. A címke azt jelöli, hogy az adott termék kidobásakor a szokványos háztartási hulladékelszállítási rendszerektől elkülönített eljárást kell alkalmazni. Az Ön felelőssége, hogy ezt, és más elektromos és elektronikus berendezéseit a kormányzati vagy a helyi hatóságok által kijelölt gyűjtőredszereken keresztül számolja fel. A megfelelő hulladékfeldolgozás segít a környezetre és az emberi egészségre potenciálisan ártalmas negatív hatások megelőzésében. Ha elavult berendezéseinek felszámolásához további részletes információra van szüksége, kérjük, lépjen kapcsolatba a helyi hatóságokkal, a hulladékfeldolgozási szolgálattal, vagy azzal üzlettel, ahol a terméket vásárolta.

Nederlands/Dutch

Milieu-informatie voor klanten in de Europese Unie

De Europese Richtlijn 2002/96/EC schrijft voor dat apparatuur die is voorzien van dit symbool op het product of de verpakking, niet mag worden ingezameld met niet-gescheiden huishoudelijk afval. Dit symbool geeft aan dat het product apart moet worden ingezameld. U bent zelf verantwoordelijk voor de vernietiging van deze en andere elektrische en elektronische apparatuur via de daarvoor door de landelijke of plaatselijke overheid aangewezen inzamelingskanalen. De juiste vernietiging en recycling van deze apparatuur voorkomt mogelijke negatieve gevolgen voor het milieu en de gezondheid. Voor meer informatie over het vernietigen van uw oude apparatuur neemt u contact op met de plaatselijke autoriteiten of afvalverwerkingsdienst, of met de winkel waar u het product hebt aangeschaft.

Norsk/Norwegian

Miljøinformasjon for kunder i EU

EU-direktiv 2002/96/EF krever at utstyr med følgende symbol avbildet på produktet og/eller pakningen, ikke må kastes sammen med usortert avfall. Symbolet indikerer at dette produktet skal håndteres atskilt fra ordinær avfallsinnsamling for husholdningsavfall. Det er ditt ansvar å kvitte deg med dette produktet og annet elektrisk og elektronisk avfall via egne innsamlingsordninger slik myndighetene eller kommunene bestemmer. Korrekt avfallshåndtering og gjenvinning vil være med på å forhindre mulige negative konsekvenser for miljø og helse. For nærmere informasjon om håndtering av det kasserte utstyret ditt, kan du ta kontakt med kommunen, en innsamlingsstasjon for avfall eller butikken der du kjøpte produktet.

Polski/Polish

Informacja dla klientów w Unii Europejskiej o przepisach dotyczących ochrony środowiska

Dyrektywa Europejska 2002/96/EC wymaga, aby sprzęt oznaczony symbolem znajdującym się na produkcie i/lub jego opakowaniu nie był wyrzucany razem z innymi niesortowanymi odpadami komunalnymi. Symbol ten wskazuje, że produkt nie powinien być usuwany razem ze zwykłymi odpadami z gospodarstw domowych. Na Państwu spoczywa obowiązek wyrzucania tego i innych urządzeń elektrycznych oraz elektronicznych w punktach odbioru wyznaczonych przez władze krajowe lub lokalne. Pozbywanie się sprzętu we właściwy sposób i jego recykling pomogą zapobiec potencjalnie negatywnym konsekwencjom dla środowiska i zdrowia ludzkiego. W celu uzyskania szczegółowych informacji o usuwaniu starego sprzętu, prosimy zwrócić się do lokalnych władz, służb oczyszczania miasta lub sklepu, w którym produkt został nabyty.

Português/Portuguese

Informação ambiental para clientes da União Europeia

A Directiva Europeia 2002/96/CE exige que o equipamento que exibe este símbolo no produto e/ou na sua embalagem não seja eliminado junto com os resíduos municipais não separados. O símbolo indica que este produto deve ser eliminado separadamente dos resíduos domésticos regulares. É da sua responsabilidade eliminar este e qualquer outro equipamento eléctrico e electrónico através dos instalações de recolha designadas pelas autoridades governamentais ou locais. A eliminação e reciclagem correctas ajudarão a prevenir as consequências negativas para o ambiente e para a saúde humana. Para obter informações mais detalhadas sobre a forma de eliminar o seu equipamento antigo, contacte as autoridades locais, os serviços de eliminação de resíduos ou o estabelecimento comercial onde adquiriu o produto.

Slovenčina/Slovak

Informácie o ochrane životného prostredia pre zákazníkov v Európskej únii

Podľa európskej smernice 2002/96/ES zariadenie s týmto symbolom na produkte a/alebo jeho balení nesmie byť likvidované spolu s netriedeným komunálnym odpadom. Symbol znamená, že produkt by sa mal likvidovať oddelene od bežného odpadu z domácností. Je vašou povinnosťou likvidovať toto i ostatné elektrické a elektronické zariadenia prostredníctvom špecializovaných zberných zariadení určených vládou alebo miestnymi orgánmi. Správna likvidácia a recyklácia pomôže zabrániť prípadným negatívnym dopadom na životné prostredie a zdravie ľudí. Ak máte záujem o podrobnejšie informácie o likvidácii starého zariadenia, obráťte sa, prosím, na miestne orgány, organizácie zaoberajúce sa likvidáciou odpadov alebo obchod, v ktorom ste si produkt zakúpili.

Slovenčina/Slovene

Okoljske informacije za stranke v Evropski uniji

Evropska direktiva 2002/96/EC prepoveduje odlaganje opreme, označene s tem simbolom – na izdelku in/ali na embalaži – med običajne, nerazvrščene odpadke. Ta simbol opozarja, da je treba izdelek odvreči ločeno od preostalih gospodinjskih odpadkov. Vaša odgovornost je, da to in preostalo električno in elektronsko opremo odnesete na posebna zbirališča, ki jih določijo državne ustanove ali lokalna uprava. S pravilnim odlaganjem in recikliranjem boste preprečili morebitne škodljive vplive na okolje in zdravje ljudi. Če želite izvedeti več o odlaganju stare opreme, se obrnite na lokalno upravo, odpad ali trgovino, kjer ste izdelek kupili.

Suomi/Finnish

Ympäristöä koskevia tietoja EU-alueen asiakkaille

EU-direktiivi 2002/96/EY edellyttää, että jos laitteistossa on tämä symboli itse tuotteessa ja/tai sen pakkauksessa, laitteistoa ei saa hävittää lajittelemattoman yhdyskuntajätteen mukana. Symboli merkitsee sitä, että tämä tuote on hävitettävä erillään tavallisesta kotitalousjätteestä. Sinun vastuullasi on hävittää tämä elektroniikkatuote ja muut vastaavat elektroniikkatuotteet viemällä tuote tai tuotteet viranomaisten määräämään keräyspisteeseen. Laitteiston oikea hävittäminen estää mahdolliset kielteiset vaikutukset ympäristöön ja ihmisten terveyteen. Lisätietoja vanhan laitteiston oikeasta hävitystavasta saa paikallisilta viranomaisilta, jätteenhävityspalvelusta tai siitä myymälästä, josta ostit tuotteen.

Svenska/Swedish

Miljöinformation för kunder i Europeiska unionen

Det europeiska direktivet 2002/96/EC kräver att utrustning med denna symbol på produkten och/eller förpackningen inte får kastas med osorterat kommunalt avfall Symbolen visar att denna produkt bör kastas efter att den avskiljts från vanligt hushållsavfall. Det faller på ditt ansvar att kasta denna och annan elektrisk och elektronisk utrustning på fastställda insamlingsplatser utsedda av regeringen eller lokala myndigheter. Korrekt kassering och återvinning skyddar mot eventuella negativa konsekvenser för miljön och personhälsa. För mer detaljerad information om kassering av din gamla utrustning kontaktar du dina lokala myndigheter, avfallshanteringen eller butiken där du köpte produkten.

For more information, visit www.linksys.com.

Appendix I: Contact Information

Need to contact Linksys? Visit us online for information on the latest products and updates to your existing products at:	http://www.linksys.com or ftp.linksys.com
Can't find information about a product you want to buy on the web? Do you want to know more about networking with Linksys products? Give our advice line a call at:	800-546-5797 (LINKSYS)
Or fax your request in to:	949-823-3002
If you experience problems with any Linksys product, you can call us at:	800-326-7114
Don't wish to call? You can e-mail us at:	support@linksys.com
If any Linksys product proves defective during its warranty period, you can call the Linksys Return Merchandise Authorization department for obtaining a Return Authorization Number at: (Details on Warranty and RMA issues can be found in the Warranty Information section in this Guide.)	949-823-3000